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PATENT

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Malouf et al.

Examiner: Not Assigned

Application No.: 10/029,413

Group Art Unit: Not Assigned

Filed: December 20, 2001

Docket No.: 421/29/2

Confirmation No.: 3695

or: PURIFIED AND ISOLATED PLATELET CALCIUM CHANNEL NUCLEIC ACIDS

AND POLYPEPTIDES AND THERAPEUTIC AND SCREENING METHODS

USING SAME

STATEMENT THAT SEQUENCE LISTING AND COMPUTER READABLE COPY ARE THE SAME

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Respectfully submitted,

JENKINS & WILSON, P.A.

Date: 03/18/2002

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gag gaa gtg gag atc atg gca aca gag cta ctg aaa gga cga gag Glu Glu Val Glu Ile Met Ala Thr Glu Leu Leu Lys Gly Arg Glu 1805 1810 1815	5454
gcc cca gac ggc atg gcc agc tcc ctg gga tgc ctg aac ctc ggg Ala Pro Asp Gly Met Ala Ser Ser Leu Gly Cys Leu Asn Leu Gly 1820 1825 1830	5499
tcc tcc ctg ggc agc ctc gac caa cac cag ggc tcc cag gag acc Ser Ser Leu Gly Ser Leu Asp Gln His Gln Gly Ser Gln Glu Thr 1835 1840 1845	5544
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Glu Trp Lys Pro Phe Glu Thr Ile Ile Leu Leu Thr Ile Phe Ala Asn 50 55 60	
Cys Val Ala Leu Ala Val Tyr Leu Pro Met Pro Glu Asp Asp Asn Asn 65 70 75 80	
Ser Leu Asn Leu Gly Leu Glu Lys Leu Glu Tyr Phe Phe Leu Ile Val	

- Phe Ser Ile Glu Ala Ala Met Lys Ile Ile Ala Tyr Gly Phe Leu Phe 100 \$105\$
- His Gln Asp Ala Tyr Leu Arg Ser Gly Trp Asn Val Leu Asp Phe Thr 115 120 125
- Ile Val Phe Leu Gly Val Phe Thr Val Ile Leu Glu Gln Val Asn Val . 130 135 140
- Ile Gln Ser His Thr Ala Pro Met Ser Ser Lys Gly Ala Gly Leu Asp 145 150 155 160
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- Leu Arg Glu Lys Gln Gln Leu Asp Glu Asp Leu Arg Gly Tyr Met Ser \$355\$
- Trp Ile Thr Gln Gly Glu Val Met Asp Val Glu Asp Phe Arg Glu Gly 370 375 380
- Lys Leu Ser Leu Asp Glu Gly Gly Ser Asp Thr Glu Ser Leu Tyr Glu 385 390 395 400

 Ile
 Ala
 Gly
 Leu
 Ass
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 Gln
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 Ile
 Arg
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 Arg
 Gln

 Trp
 Ass
 Arg
 Ile
 Arg
 Trp
 Lys
 Gys
 His
 Asp
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 Asp
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 Ala
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 Lys
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 Ile
 Asp
 Ile
 Ile

Gly Met Gln Leu Phe Gly Gly Arg Tyr Asp Phe Glu Asp Thr Glu Val

Arg Arg Ser Asn Phe Asp Asn Phe Pro Gln Ala Leu Ile Ser Val Phe 595 600 605

Gln Val Leu Thr Gly Glu Asp Trp Thr Ser Met Met Tyr Asn Gly Ile 610 $\,$ 615 $\,$ 620

Met Ala Ser Ser Gly Pro Ser Tyr Pro Gly Met Leu Val Cys Ile Tyr 625 630 635 640

Phe Ile Ile Leu Phe Val Cys Gly Asn Tyr Ile Leu Leu Asn Val Phe 645 $\,$ 655 $\,$

Leu Ala Ile Ala Val Asp Asn Leu Ala Glu Ala Glu Ser Leu Thr Ser 660 665 670

Ala Gln Lys Ala Lys Ala Glu Glu Lys Lys Arg Arg Lys Met Ser Lys $675 \hspace{1.5cm} 680 \hspace{1.5cm} 685$

Gly Leu Pro Asp Lys Ser Glu Glu Glu Lys Ser Thr Met Ala Lys Lys 690 695 700

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- Asp Gly Asp Pro Met Gln Ile Glu Leu Arg His Arg Glu Trp Val His 980 985 990
- Ser Asp Phe His Phe Asp Asn Val Leu Ser Ala Met Met Ser Leu Phe 995 1000 1005

- Thr Val Ser Thr Phe Glu Gly Trp Pro Gln Leu Leu Tyr Lys Ala 1010 1015 1020
- Ile Asp Ser Asn Ala Glu Asp Val Gly Pro Ile Tyr Asn Asn Arg 1025 1030 1035
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- Phe Phe Met Met Asn Ile Phe Val Gly Phe Val Ile Val Thr Phe 1055 $$ 1060 $$ 1065
- Gln Glu Gln Gly Glu Thr Glu Tyr Lys Asn Cys Glu Leu Asp Lys 1070 \$1075\$
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- Arg Cys Tyr Ile Pro Lys Asn Pro Tyr Gln Tyr Gln Val Trp Tyr 1100 1105 1110
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- Pro Tyr Val Ala Leu Leu Ile Val Met Leu Phe Phe Ile Tyr Ala 1250 1255 1260
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- Val Leu Leu Phe Arg Cys Ala Thr Gly Glu Ala Trp Gln Glu 1295 1300 1305
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Thr Val Leu Ser Trp Gln Ala Ala Ile Asp Ala Ala Arg Gln Ala Lys
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gct gcc caa act atg agc acc tot gca ccc cca cct gta gga tot ctc Ala Ala Gln Thr Met Ser Thr Ser Ala Pro Pro Pro Val Gly Ser Leu
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                                                                                                             288
tcg tcc aac agc cga cct gcc cgc gcc ctt ttc tgt tta tca ctc aat
Ser Ser Asn Ser Arg Pro Ala Arg Ala Leu Phe Cys Leu Ser Leu Asn
                                                                                                             336
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gac ata ttt ata tta ttg gct att ttt gcc aat tgt gtg gcc tta gct
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gtg Val 625	gaa Glu	ctg Leu	gaa Glu	atc Ile	atg Met 630	tct Ser	ccc Pro	ctg Leu	gly ggg	atc Ile 635	tct Ser	gtg Val	ttt Phe	cgg Arg	tgt Cys 640	1920
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	gcc Ala 113	Il				n Gl							>				3429
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						acg Thr										2809
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nnn Xaa 305	Xaa	nnn Xaa	nnn Xaa	nnn Xaa	nnn Xaa 310	nnn Xaa	nnn Xaa	nnn Xaa	nnn Xaa	nnn Xaa 315	nnn Xaa	nnn Xaa	nnn Xaa	nnn Xaa	nnn Xaa 320	3	3241
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cgc Arg	gag Glu	tgg Trp 355	gta Val	cac His	agc Ser	gac Asp	ttc Phe 360	cac His	ttc Phe	gac Asp	aat Asn	gtg Val 365	ctc Leu	tca Ser	gcc Ala	3	3385
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gcc Ala	atc Ile 770	tgg Trp	gca Ala	gag Glu	tat Tyr	gac Asp 775	cca Pro	gag Glu	gct Ala	aag Lys	999 Gly 780	aga Arg	atc Ile	aaa Lys	cac His	4633
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aga Arg 865	acc Thr	agc Ser	atg Met	aag Lys	ctc Leu 870	ttg Leu	gac Asp	cag Gln	gtc Val	atc Ile 875	cct Pro	cca Pro	ata Ile	gga Gly	gat Asp 880	4921
gat Asp	gag Glu	gtg Val	aca Thr	gtg Val 885	gly aaa	aag Lys	ttc Phe	tac Tyr	gcc Ala 890	aca Thr	ttc Phe	ctc Leu	atc Ile	cag Gln 895	gag Glu	4969
cac His	ttc Phe	cgg Arg	aag Lys 900	ttc Phe	atg Met	aaa Lys	cgc Arg	caa Gln 905	gag Glu	gag Glu	tat Tyr	tat Tyr	ggc Gly 910	tat Tyr	cgg Arg	5017

Pro	aag Lys	aag Lys 915	gac Asp	att Ile	gta Val	cag Gln	atc Ile 920	cag Gln	gca Ala	G1y 999	ctg c Leu A 9	gg a rg T 25	cc a hr I	tt ga le Gl	g u	5065
gaa Glu	gag Glu 930	gca Ala	gcc Ala	ccc Pro	gag Glu	atc Ile 935	tgt Cys i	cgc Arg	acg Thr	Val	tca g Ser G 940	ga ga ly As	ac ci sp Le	tg gc eu Al	t a	5113
gct Ala 945	Glu	gag Glu	gag Glu	ctg Leu	gag Glu 950	aga Arg	gcc a Ala I	atg Met	gtg Val	gag Glu 955	gct g Ala A	cg at la Me	et G	ag ga lu Gl 96	u	5161
gga Gly	ata Ile	ttc Phe	cgg Arg	agg Arg 965	act Thr	gga Gly	ggc (Gly 1	Leu	ttt Phe 970	ggc Gly	cag g Gln V	tg ga al As	ac aa sp As 97	sn Ph	c e	5209
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                                                                    1215
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1220 1225 1230
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Ser Arg Ser Thr Arg Glu Asn Thr Ser Arg Cys Ser Ala Pro Ala
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Thr Ala Leu Leu Ile Gln Lys Ala Leu Val Arg Gly Gly Leu Gly
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Thr Leu Ala Ala Asp Ala Asn Phe Ile Met Ala Thr Gly Gln Ala
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      1265
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ctg gca gat gcc tgc caa atg gaa cca gag gaa gtg gag atc atg Leu Ala Asp Ala Cys Gln Met Glu Pro Glu Glu Val Glu Ile Met
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Ala Thr Glu Leu Leu Lys Gly Arg Glu Ala Pro Glu Gly Met Ala
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        The 'Xaa' at location 1118 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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Asp Pro Tyr Pro Ser Ala Asp Phe Pro Gly Asp Asp Glu Glu Asp Glu

Pro Glu Ile Pro Leu Ser Pro Arg Pro Arg Pro Leu Ala Glu Leu Gln

Leu Lys Glu Lys Ala Val Pro Ile Pro Glu Ala Ser Ser Phe Phe Ile

Phe Ser Pro Thr Asn Lys Ile Arg Val Leu Cys His Arg Ile Val Asn 100 105 110

Ala Thr Trp Phe Thr Asn Phe Ile Leu Leu Phe Ile Leu Leu Ser Ser

Ala Ala Leu Ala Ala Glu Asp Pro Ile Arg Ala Asp Ser Met Arg Asn 130 135 140

Gln Ile Leu Lys His Phe Asp Ile Gly Phe Thr Ser Val Phe Thr Val

Glu Ile Val Leu Lys Met Thr Thr Tyr Gly Ala Phe Leu His Lys Gly 165 170 175

Ser Phe Cys Arg Asn Tyr Phe Asn Met Leu Asp Leu Leu Val Val Ala

Val Ser Leu Ile Ser Met Gly Leu Glu Ser Ser Ala Ile Ser Val Val

Lys Ile Leu Arg Val Leu Arg Val Leu Arg Pro Leu Arg Ala Ile Asn

- Arg Ala Lys Gly Leu Lys Val Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa 225 230 235 240

- Tyr Tyr Val Tyr Lys Asp Gly Asp Pro Met Gln Ile Glu Leu Arg His 340 345 350
- Arg Glu Trp Val His Ser Asp Phe His Phe Asp Asn Val Leu Ser Ala 355 360 365
- Met Met Ser Leu Phe Thr Val Ser Thr Phe Glu Gly Trp Pro Gln Leu 370 375 380
- Leu Tyr Lys Ala Ile Asp Ser Asn Ala Glu Asp Val Gly Pro Ile Tyr 385 390 395 400
- Asn Asn Arg Val Glu Met Ala Ile Phe Phe Ile Ile Tyr Ile Ile Leu 405 410 415
- Phe Gln Glu Gln Gly Glu Thr Glu Tyr Lys Asn Cys Glu Leu Asp Lys 435 440 445
- Asn Gln Arg Gln Cys Val Gln Tyr Ala Leu Lys Ala Arg Pro Leu Arg 450 460
- Cys Tyr Ile Pro Lys Asn Pro Tyr Gln Tyr Gln Val Trp Tyr Ile Val 465 470 475 480
- Thr Ser Ser Tyr Phe Glu Tyr Leu Met Phe Ala Leu Ile Met Leu Asn 485 490 495
- Thr Ile Cys Leu Gly Met Gln His Tyr Asn Gln Ser Glu Gln Met Asn 500 505 510
- His Ile Ser Asp Ile Leu Asn Val Ala Phe Thr Ile Ile Phe Thr Leu 515 520 525

- Glu Met Ile Leu Lys Leu Met Ala Phe Lys Ala Arg Gly Tyr Phe Gly 530 540
- Asp Pro Trp Asn Val Phe Asp Phe Leu Ile Val Ile Gly Ser Ile Ile 545 550 560
- Asp Val Ile Leu Ser Glu Ile Asp Thr Phe Leu Ala Ser Ser Gly Gly 565 570 575
- Leu Tyr Cys Leu Gly Gly Gly Cys Gly Asn Val Asp Pro Asp Glu Ser 580 585 590
- Ala Arg Ile Ser Ser Ala Phe Phe Arg Leu Phe Arg Val Met Arg Leu 595 600 605
- Phe Ile Lys Ser Phe Gln Ala Leu Pro Tyr Val Ala Leu Leu Ile Val 625 630 635 640
- Met Leu Phe Phe Ile Tyr Ala Val Ile Gly Met Gln Met Phe Gly Lys 645 650 655
- Ile Ala Leu Val Asp Gly Thr Gln Ile Asn Arg Asn Asn Asn Phe Gln $660 \hspace{1cm} 665 \hspace{1cm} 670 \hspace{1cm}$
- Thr Phe Pro Gln Ala Val Leu Leu Leu Phe Arg Cys Ala Thr Gly Glu 675 680 685
- Ala Trp Gln Glu Ile Leu Leu Ala Cys Ser Tyr Gly Lys Leu Cys Asp
 690 695 700
- Pro Glu Ser Asp Tyr Ala Pro Gly Glu Glu Tyr Thr Cys Gly Thr Asn 705 710 710 720
- Phe Ala Tyr Tyr Phe Ile Ser Phe Tyr Met Leu Cys Ala Phe Leu 735 735
- Val Ile Asn Leu Phe Val Ala Val Ile Met Asp Asn Phe Asp Tyr Leu 740 745 750
- Thr Arg Asp Trp Ser Ile Leu Gly Pro His His Leu Asp Glu Phe Lys 755 760 765
- Ala Ile Trp Ala Glu Tyr Asp Pro Glu Ala Lys Gly Arg Ile Lys His 770 780
- Leu Asp Val Val Thr Leu Leu Arg Arg Ile Gln Pro Pro Leu Gly Phe 785 790 795 800
- Gly Lys Phe Cys Pro His Arg Val Ala Cys Lys Arg Leu Val Gly Met 805 810 815
- Asn Met Pro Leu Asn Ser Asp Gly Thr Val Thr Phe Asn Ala Thr Leu 820 825 830

- Phe Ala Leu Val Arg Thr Ala Leu Lys Ile Lys Thr Glu Gly Asn Phe 835 840 845
- Glu Gln Ala Asn Glu Glu Leu Arg Ala Ile Ile Lys Lys Ile Trp Lys 850 855 860
- Arg Thr Ser Met Lys Leu Leu Asp Gln Val Ile Pro Pro Ile Gly Asp 865 870 875 880
- Asp Glu Val Thr Val Gly Lys Phe Tyr Ala Thr Phe Leu Ile Gln Glu 885 890 895
- His Phe Arg Lys Phe Met Lys Arg Gln Glu Glu Tyr Tyr Gly Tyr Arg 900 905 910
- Pro Lys Lys Asp Ile Val Gln Ile Gln Ala Gly Leu Arg Thr Ile Glu 915 920 925
- Glu Glu Ala Ala Pro Glu Ile Cys Arg Thr Val Ser Gly Asp Leu Ala 930 935 940
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- Gly Ile Phe Arg Arg Thr Gly Gly Leu Phe Gly Gln Val Asp Asn Phe 965 970 975
- Leu Glu Arg Thr Asn Ser Leu Pro Pro Val Met Ala Asn Gln Arg Pro 980 985 980
- Leu Gln Phe Ala Glu Ile Glu Met Glu Glu Met Glu Ser Pro Val Phe 995 1000 1005
- Leu Glu Asp Phe Pro Gln Asp Pro Arg Thr Asn Pro Leu Ala Arg 1010 1015 1020
- Ala Asn Thr Asn Asn Ala Asn Ala Asn Val Ala Tyr Gly Asn Ser 1025 $$ 1030 $$ 1035
- Asn His Ser Asn Ser His Val Phe Ser Ser Val His Tyr Glu Arg
- Glu Phe Pro Glu Glu Thr Glu Thr Pro Ala Thr Arg Gly Arg Ala 1055 1065

- 1150
- 1165 1170
- Xaa Xaa Thr Gly Pro His Ser Lys Pro Cys Val Glu Met Leu Lys 1175 1180 1185
- Gly Leu Leu Thr Gln Arg Ala Met Pro Arg Gly Gln Ala Pro Pro 1190 1195 1200
- Ala Pro Cys Gln Cys Pro Arg Val Glu Ser Ser Met Pro Glu Asp 1205 1210 1215
- Arg Lys Ser Ser Thr Pro Gly Ser Leu His Glu Glu Thr Pro His 1220 1225 1230
- Ser Arg Ser Thr Arg Glu Asn Thr Ser Arg Cys Ser Ala Pro Ala 1235 1240 1245
- Thr Ala Leu Leu Ile Gln Lys Ala Leu Val Arg Gly Gly Leu Gly 1250 1255 1260
- Thr Leu Ala Ala Asp Ala Asn Phe Ile Met Ala Thr Gly Gln Ala
- Leu Ala Asp Ala Cys Gln Met Glu Pro Glu Glu Val Glu Ile Met 1285 1290
- Ala Thr Glu Leu Leu Lys Gly Arg Glu Ala Pro Glu Gly Met Ala 1295 1300 1305
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- gacagcetca gecagectag tececaagge gggggcattg gggacacagg gaagggaaag

cac	tggg	gtg	<u>a</u> aaa	agca	gg a	gaaa	gcca	g at	tece	aggg	aag		let G		ca tc ro Se		237
tca Ser 5	ccc Pro	cag Gln	gat Asp	gaa Glu	ggc Gly 10	ctg Leu	agg Arg	aag Lys	aaa Lys	cag Gln 15	ecc Pro	aag Lys	aag Lys	cca Pro	gtt Val 20		285
cct Pro	gag Glu	att Ile	ctg Leu	cca Pro 25	agg Arg	cca Pro	ccc Pro	cgg Arg	gct Ala 30	ttg Leu	ttc Phe	tgc Cys	ctg Leu	acc Thr 35	ctg Leu		333
gag Glu	aac Asn	ccc Pro	ctg Leu 40	agg Arg	aag Lys	gcc Ala	tgc Cys	atc Ile 45	agc Ser	att Ile	gta Val	gaa Glu	tgg Trp 50	aag Lys	ccc Pro		381
ttc Phe	gag Glu	acg Thr 55	atc Ile	atc Ile	ttg Leu	ctc Leu	acc Thr 60	atc Ile	ttt Phe	gcc Ala	aat Asn	tgt Cys 65	gtg Val	gcc Ala	ctg Leu		429
Ala	Val 70	Tyr	ctg Leu	Pro	Met	Pro 75	Glu	Asp	Asp	Asn	Asn 80	Ser	Leu	Asn	Leu		477
ggc Gly 85	ctg Leu	gag Glu	aag Lys	ctg Leu	gag Glu 90	tat Tyr	ttc Phe	ttc Phe	ctc Leu	att Ile 95	gtc Val	ttc Phe	tcg Ser	att Ile	gaa Glu 100		525
Ala	Ala	Met	aag Lys	Ile 105	Ile	Ala	Tyr	Gly	Phe 110	Leu	Phe	His	Gln	Asp 115	Āla		573
Tyr	Leu	Arg	agt Ser 120	Gly	Trp	Asn	Val	Leu 125	Asp	Phe	Thr	Ile	Val 130	Phe	Leu		621
GIÀ	Val	Phe 135	acc Thr	Val	Ile	Leu	Glu 140	Gln	Val	Asn	Val	Ile 145	Gln	Ser	His		669
Thr	Ala 150	Pro	atg Met	Ser	Ser	Lys 155	Gly	Ala	Gly	Leu	Asp 160	Val	Lys	Ala	Leu		717
Arg 165	Ala	Phe	cga Arg	Val	Leu 170	Arg	Pro	Leu	Arg	Leu 175	Val	Ser	Gly	Val	Pro 180		765
Ser	Leu	Gln	gtg Val	Val 185	Leu	Asn	Ser	Ile	Phe 190	Lys	Ala	Met	Leu	Pro 195	Leu		813
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tgc Cys	cgg Arg	ggc Gly	ggc Gly	tgc Cys 265	cca Pro	gly ggg	ccc Pro	aac Asn	cat His 270	ggc Gly	atc Ile	acc Thr	cac His	ttc Phe 275	gac Asp	1	053

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								acc Thr								:	1629
								act Thr								;	1677
								atg Met								:	1725
					_			ctg Leu			_	-	** - 7	~ ~	~ .	;	1773
								tcc Ser 525								:	1821
			Phe					tat Tyr								:	1869
gtg Val	gca Ala 550	tcc Ser	ctg Leu	ctc Leu	aac Asn	tcc Ser 555	atc Ile	cgc Arg	tcc Ser	atc Ile	gcc Ala 560	tcc Ser	ctg Leu	ctg Leu	ctg Leu	:	1917
						Val		ttc Phe									1965

		999 999														:	2013
		aac Asn														:	2061
		gac Asp 615														:	2109
		tcc Ser														:	2157
ttc Phe 645	gtc Val	tgt Cys	ggc Gly	aac Asn	tac Tyr 650	atc Ile	ctg Leu	ctc Leu	aat Asn	gtc Val 655	ttc Phe	ctg Leu	gcc Ala	att Ile	gcc Ala 660	:	2205
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		gag Glu														:	2301
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		ggt Gly														:	2397
		tct Ser														:	2445
		999 Gly															2493
		cgt Arg															2541
		gaa Glu 775															2589
		ctg Leu															2637
		ctc Leu															2685
		cgg Arg															2733
		ttc Phe															2781
		gga Gly 855															2829
		ctg Leu															2877

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acc Thr			gga Gly 1015	Trp			g ctg 1 Leu		ı Ty			cc at la Il	le Ā		tcc Ser	33	303
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gcc Ala				Ile			ato Ile		e Le			cc tt la Ph	ne P		atg Met	33	93
atg Met				Val			gto Val		e Va			c ca ne Gl	n G		cag Gln	34	138
gga Gly				Tyr			tgt Cys		ı Le			ag aa /s As	n G		cgc Arg	34	83
caa Gln				Tyr			ı aag ı Lys		ı Ai			g ag eu Ar	g C		tac Tyr	35	528
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tcc Ser				Glu					: A]				t L		aac Asn	36	18
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acc Thr				Ile			ctc Leu		A]				a A		ggc Gly	37	53

tac Tyr	ttt Phe	gga Gly	aac Asn 1180	ccc Pro	tgg Trp	aat Asn	gtg Val	ttt Phe 1185	gac Asp	ttc Phe	ctg Leu	att Ile	gtc Val 1190	att Ile	3	3798
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			999 Gly 1210					ctg Leu 1215						aac Asn	3	3888
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			acc Thr 1255											gcc Ala	4	4023
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- Ile Gln Ser His Thr Ala Pro Met Ser Ser Lys Gly Ala Gly Leu Asp 145 150 155 160
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- Val Phe Tyr Trp Leu Val Ile Leu Ile Val Ala Leu Asn Thr Leu Ser 435 440 445
- Ile Ala Ser Glu His His Asn Gln Pro His Trp Leu Thr Arg Leu Gln $_{\rm 450}$
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- Gly Leu Pro Asp Lys Ser Glu Glu Lys Ser Thr Met Ala Lys Lys 690 695 700
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ttc Phe 645	gtc Val	tgt Cys	ggc Gly	aac Asn	tac Tyr 650	atc Ile	ctg Leu	ctc Leu	aat Asn	gtc Val 655	ttc Phe	ctg Leu	gcc Ala	att Ile	gcc Ala 660		2205
gtg Val	gac Asp	aac Asn	ctg Leu	gcc Ala 665	gag Glu	gcg Ala	gag Glu	agc Ser	ctg Leu 670	act Thr	tct Ser	gcc Ala	cag Gln	aag Lys 675	gcc Ala		2253
aag Lys	gct Ala	gag Glu	gag Glu 680	aaa Lys	aaa Lys	cgc Arg	agg Arg	aag Lys 685	atg Met	tcc Ser	aag Lys	ggt Gly	ctc Leu 690	cca Pro	gac Asp		2301
aag Lys	tca Ser	gaa Glu 695	Glu	gag Glu	aag Lys	tca Ser	acg Thr 700	Met	gcc Ala	aag Lys	aag Lys	ctg Leu 705	Glu	cag Gln	aaa Lys		2349
ccc Pro	aag Lys 710	Gly	gag Glu	ggc Gly	atc Ile	ccc Pro 715	acc Thr	act Thr	gcc Ala	aag Lys	ctg Leu 720	Lys	atc Ile	gat Asp	gag Glu		2397
ttt Phe 725	Glu	tct Ser	aat Asn	gtc Val	aat Asn 730	gag Glu	gtg Val	aag Lys	gat Asp	ccc Pro 735	Tyr	Pro	tca Ser	gcc	gac Asp 740		2445
ttc Phe	cca Pro	ggg	gat Asp	gac Asp 745	Glu	gaa Glu	gat Asp	gag Glu	rcct Pro 750	Glu	ato Ile	ccg Pro	ctg Leu	ago Ser 755	Pro		2493
cga Arg	cca Pro	cgt Arg	ccc Pro 760	Leu	gct Ala	gag Glu	ctg Leu	cag Glr 765	. Leu	aaa Lys	gag Glu	aag Lys	gcc Ala 770	Val	ccc Pro		2541
att Ile	cca Pro	gaa Glu 775	ı Ala	ago Ser	tco Ser	ttc Phe	tto Phe 780	: Ile	tto Phe	ago Ser	Pro	acc Thr	Asn	aag Lys	atc Ile		2589
cgt Arg	gto y Val 790	Leu	g tgt ı Cys	cac His	cgc Arg	ato Ile 795	Val	aat Asr	gco Ala	acc Thr	tgg Trp 800	Phe	acc Thr	aac Asr	ttc Phe		2637
ato Ile 805	e Lei	g cto Lev	tto 1 Phe	ato	cte Leu 810	Leu	ago Sei	ago Ser	gct Ala	gca Ala 815	ı Leı	g gct 1 Ala	gcg Ala	ggaa Glu	a gac 1 Asp 820		2685

ccc Pro	atc Ile	cgg Arg	gct Ala	gat Asp 825	tcc Ser	atg Met	aga Arg	aat Asn	cag Gln 830	Ile	ctt Leu	aaa Lys	cac His	ttt s Phe 835	Asp	2733
atc Ile	Gly 999	ttc Phe	acc Thr 840	tct Ser	gtc Val	ttc Phe	act Thr	gtg Val 845	Glu	att Ile	gto Val	cto Lev	2 aaq 1 Lys 850	g atg s Met D	acg Thr	2781
acc Thr	tac Tyr	gga Gly 855	gcc Ala	ttc Phe	ctg Leu	cac His	aag Lys 860	ggt Gly	tcc Ser	tto Phe	tgo Cys	2 cgc 3 Arg 865	g Ası	t tac n Tyr	ttc Phe	2829
aac Asn	atg Met 870	ctg Leu	gac Asp	ctg Leu	ctg Leu	gtg Val 875	gtg Val	gcc Ala	gtg Val	Ser	C Cto Lei 880	1 I1e	tc Se:	c atg r Met	gga Gly	2877
ctt Leu 885	gag Glu	tcc Ser	agt Ser	gcc Ala	atc Ile 890	tcc Ser	gtg Val	gtg Val	Lys	ato Ile 899	e Lei	g ago	g gte g Va	g ctg l Leu	agg Arg 900	2925
gtg Val	ctc Leu	cga Arg	cca Pro	ctc Leu 905	aga Arg	gcc Ala	atc Ile	aac Asn	aga Arg 910	Ala	a Lys	g Gly	g tte	g aag u Lys 915	His	2973
gtg Val	gct Ala	agg Arg	tgc Cys 920	atg Met	ttc Phe	gtg Val	gcc Ala	atc Ile 925	Ser	ace Th	c ato	ggg Gly	g aa / As: 93	c ato n Ile 0	gtg Val	3021
ctg Leu	gtc Val	act Thr 935	acc Thr	ctc Leu	cta Leu	cag Gln	ttc Phe 940	atg Met	ttt Phe	gce Ala	tge a Cy	2 at 11 94	e Gl	c gto y Val	cag Gln	3069
ctc Leu	ttc Phe 950	aag Lys	ggg Gly	aag Lys	ttc Phe	ttc Phe 955	agg Arg	tgc Cys	aco Thi	ga As	p Lei 96	ı Se	c aa r Ly	g atg s Met	g aca Thr	3117
gag Glu 965	gag Glu	gag Glu	tgc Cys	agg Arg	ggc Gly 970	tac Tyr	tac Tyr	tac Tyr	gtg Val	ta Ty 97	r Ly	g ga s As	c gg p Gl	g gad y Asp	Pro 980	3165
atg Met	cag Gln	ata Ile	gag Glu	ctg Leu 985	cgt Arg	cac His	cgc Arg	gag	tgg Trj 990) Va	a ca l Hi	c ag s Se	c ga r As	c tto p Phe 999	cac His	3213
			gtg Val 100	Le	c tc u Se			t Me			ctc Leu				tcc Ser	3258
			gga Gly 101	Tr	g cc p Pr			u Le			aag Lys				tcc Ser	3303
aat Asn	gcg Ala	gag Glu	gac Asp 103	Va	9 99 1 Gl	t cc y Pr	c at o Il	е ту	ac a /r 2 035	aac Asn	aac Asn	cgt Arg	gtg Val	gag Glu 1040	atg Met	3348
_	_		ttc Phe 104	11	c at e Il			e Il			att Ile			ttc Phe 1055	atg Met	3393
atg Met	aac Asn	atc Ile	ttt Phe 106	٧a	g gg 1 Gl	c tt y Ph	c gt ie Va	ıl I	t le 065	gtc Val	acc Thr	ttc Phe	cag Gln	gag Glu 1070	cag Gln	3438
			gag Glu 107	Ту	c aa r Ly			s G						cag Gln 1085		3483
			cag Gln 109	. Ту				s A						tgc Cys 1100		3528
			aac Asn 110	ı Pr	a ta o Ty	c ca r Gl	ig ta .n Ty	r G			tgg Trp			gtc Val 1115	acc Thr	3573

tcc Ser	tcc Ser	tac Tyr	ttt Phe 1120	gaa Glu	tac Tyr	ctg Leu	atg Met	ttt Phe 1125	gcc Ala	ctc Leu	atc Ile	atg Met	ctc Leu 1130	aac Asn	3618
acc Thr	atc Ile	tgc Cys	ctc Leu 1135	ggc Gly	atg Met	cag Gln	cac His	tac Tyr 1140	aac Asn	cag Gln	tcg Ser	gag Glu	cag Gln 1145	atg Met	3663
aac Asn	cac His	atc Ile	tca Ser 1150	gac Asp	atc Ile	ctc Leu	aat Asn	gtg Val 1155	gcc Ala	ttc Phe	act Thr	atc Ile	atc Ile 1160	ttc Phe	3708
		gag Glu	atg Met 1165	atc Ile	ctc Leu	aag Lys	ctc Leu	atg Met 1170	gcc Ala	ttc Phe	aag Lys	gcc Ala	agg Arg 1175	gly ggc	3753
tac Tyr	ttt Phe	gga Gly	aac Asn 1180	ccc Pro	tgg Trp	aat Asn	gtg Val	ttt Phe 1185	gac Asp	ttc Phe	ctg Leu	att Ile	gtc Val 1190	att Ile	3798
ggc Gly	agc Ser	atc Ile	att Ile 1195	gat Asp	gtc Val	atc Ile	ctc Leu	agt Ser 1200	gag Glu	atc Ile	gac Asp	act Thr	ttc Phe 1205	ctg Leu	3843
gcc Ala	tcc Ser	agc Ser	999 Gly 1210	gga Gly	ctg Leu	tat Tyr	tgc Cys	ctg Leu 1215	ggt Gly	gga Gly	ggc Gly	tgc Cys	999 Gly 1220	aac Asn	3888
gtt Val	gac Asp	cca Pro	gat Asp 1225	Glu	agt Ser	gcc Ala	cgc Arg	atc Ile 1230	tcc Ser	agc Ser	gcc Ala	ttc Phe	ttc Phe 1235	cgc Arg	3933
ctg Leu	ttc Phe	cgt Arg	gtc Val 1240	Met	agg Arg	ctg Leu	atc Ile	aag Lys 1245	Leu	ctg Leu	agc Ser	cgg Arg	gca Ala 1250	gaa Glu	3978
			acc Thr 1255	Leu					atc Ile	aag Lys	tcc Ser	ttc Phe	cag Gln 1265	gcc Ala	4023
cta Leu	ccc Pro	tac Tyr	gtg Val 1270	Āla	ctg Leu	ctc Leu	atc Ile	gtc Val 1275					atc Ile 1280	tac Tyr	4068
gct Ala	gtc Val	atc Ile	ggc Gly 1285	Met	cag Gln	atg Met	ttt Phe	999 Gly 1290	Lys	atc Ile	gcc Ala	ttg Leu	gtg Val 1295	gat Asp	4113
Gly 999	acc Thr	caa Gln	ata Ile 1300	Asn	cgg Arg	aac Asn	aac Asn	aac Asn 1305	Phe	cag Gln	acc Thr	ttc Phe	cca Pro 1310	caa Gln	4158
gct Ala	gtg Val	cta Leu	ctg Leu 1315	Leu	ttc Phe	agg Arg	tgt Cys	gca Ala 1320	Thr	ggt Gly	gag Glu	gcc Ala	tgg Trp 1325	cag Gln	4203
			ctg Leu 1330	Ala					Lys				cca Pro 1340		4248
			gcc Ala 1345	Pro					Thr				aac Asn 1355		4293
			tac Tyr 1360	Phe				tac Tyr 1365	Met				ttc Phe 1370		4338
			ctc Leu 1375	Phe	gtg Val	gct	gtc Val	atc Ile 1380	Met	gac	aat Asn	ttt Phe	gac Asp 1385	Tyr	4383
ctc Leu	acc Thr	cgg Arg	gac Asp 1390	Trp	tcc Ser	ato Ile	ctg Leu	ggc Gly 1395	Pro				gat Asp 1400	gag Glu	4428

			atc Ile 1405	Trp					Pro				999 Gly 1415		44	73
			ctg Leu 1420					ctg Leu 1425					cag Gln 1430	ccc Pro	45	18
			ttt Phe 1435										tgt Cys 1445		450	63
cgg Arg	ctg Leu	gtg Val	ggc Gly 1450	Met	aac Asn	atg Met	ccc Pro	ctg Leu 1455	aac Asn	agc Ser	gac Asp	ggc Gly	aca Thr 1460	gtc Val	46	80
			gcc Ala 1465											aag Lys	46!	53
			gaa Glu 1480					cag Gln 1485				gag Glu		agg Arg	469	98
gcc Ala	atc Ile	atc Ile	aag Lys 1495	Lys	atc Ile	tgg Trp	aag Lys	aga Arg 1500	acc Thr			aag Lys		ttg Leu	474	43
			atc Ile 1510											G1y 999	478	88
			gcc Ala 1525					cag Gln 1530						ttc Phe	483	33
			caa Gln 1540									aag Lys		gac Asp	487	78
att Ile	gta Val	cag Gln	atc Ile 1555	cag Gln	gca Ala	Gly aaa	ctg Leu	cgg Arg 1560				gaa Glu		gca Ala	492	23
			atc Ile 1570									gct Ala		gag Glu	496	58
gag Glu	gag Glu	ctg Leu	gag Glu 1585	aga Arg	gcc Ala	atg Met	gtg Val	gag Glu 1590				gag Glu		G1A aaa	501	13
			agg Arg 1600	act Thr	gga Gly	ggc Gly	ctg Leu	ttt Phe 1605	ggc Gly	cag Gln	gtg Val	gac Asp	aac Asn 1610	ttc Phe	505	58
			acc Thr 1615											aga Arg	510)3
			ttt Phe 1630					atg Met 1635		gag Glu	atg Met	gag Glu	tca Ser 1640	cct Pro	514	18
	ttc Phe		gag Glu 1645					gat Asp 1650					ccc Pro 1655	ctg Leu	519	₹3
			aat Asn 1660					aac Asn 1665						gcg Ala	523	38
			cat His 1675					gtg Val 1680				gtc Val	cac His 1685	tat Tyr	528	33

		gag Glu	ttc Phe 1690	cca Pro	gaa Glu	gag Glu	aca Thr	gag Glu 1695	acg Thr	cct Pro	gct Ala	acc Thr	aga Arg 1700	gga Gly	5328
		ctt Leu	ggc Gly 1705	caa Gln	ccc Pro	tgc Cys	agg Arg	tcc Ser 1710	ctg Leu	gga Gly	ccc Pro	cac His	agc Ser 1715	aaa Lys	5373
		gtg Val	gag Glu 1720	atg Met	ctg Leu	aag Lys	gga Gly	ctg Leu 1725	ctg Leu	acc Thr	cag Gln	agg Arg	gca Ala 1730	atg Met	5418
			cag Gln 1735	gca Ala	cct Pro	cct Pro	gcc Ala	ccc Pro 1740	tgc Cys	cag Gln	tgc Cys	ccc Pro	agg Arg 1745	gtg Val	5463
		tcc Ser	atg Met 1750	cct Pro	gag Glu	gac Asp	aga Arg	aag Lys 1755	agc Ser	tcc Ser	aca Thr	cca Pro	999 Gly 1760	tct Ser	5508
			gag Glu 1765					agg Arg 1770				gag Glu		act Thr	5553
			tca Ser 1780		cca Pro	gct Ala	aca Thr	gcc Ala 1785	ctg Leu	ctg Leu	atc Ile	caa Gln	aag Lys 1790	gct Ala	5598
			999 Gly 1795	Gly	ctg Leu	ggc Gly	acc Thr	ttg Leu 1800	Ala	gct Ala	gat Asp	gca Ala	aac Asn 1805	ttc Phe	5643
			aca Thr 1810	Gly	cag Gln	gcc Ala	ctc Leu	gga Gly 1815	Asp	gcc Ala	tgc Cys	caa Gln	atg Met 1820	gaa Glu	5688
cca Pro	gag Glu	gaa Glu	gtg Val 1825	Glu	atc Ile	atg Met	gca Ala	aca Thr 1830					gga Gly 1835		5733
			gac Asp 1840	Gly				tcc Ser 1845	Leu				aac Asn 1850	ctc Leu	5778
gly ggg	tcc Ser	tcc Ser	ctg Leu 1855	Gly	agc Ser	ctc Leu	gac Asp	caa Gln 1860	His				cag Gln 1865	gag Glu	5823
			cct Pro 1870	Pro		ctg Leu		tgcc	caca	ca g	gcato	agca:	t ggg	gcttagag	5877
ctg	gcat	gac	caato	19999	t gg	ggaa	gttg	ctgg	ggtg	ga g	gaagg	gcta	g ccc	accgcag	5937
cag	cctc	cct	ccct	tcag	c ag	ctag	atgo	atgo	ctga	igg c	aggg	jtggt	c agg	gaaccacc	5997
tca	aaaa	gtg	cggag	gaag	t ag	ctgg	acag	gccc	tgcc	cc t	caco	agca	a gag	gcatgat	6057
tgg	atgg	agc	ttcta	atgt	c at	tcaa	aaag	gcct	ggto	ag t	gcct	gtco	c tag	ggccact	6117
ccc	acct	gca	ggaca	ttaa	a at	ctcc	aggo	: ctgt	gaca	ect g	ggc				6160

Lys Lys Pro Val Pro Glu Ile Leu Pro Arg Pro Pro Arg Ala Leu Phe 20 25 30

- Cys Leu Thr Leu Glu Asn Pro Leu Arg Lys Ala Cys Ile Ser Ile Val $35 \hspace{1cm} 40 \hspace{1cm} 45$
- Glu Trp Lys Pro Phe Glu Thr Ile Ile Leu Leu Thr Ile Phe Ala Asn 50 60
- Cys Val Ala Leu Ala Val Tyr Leu Pro Met Pro Glu Asp Asp Asn Asn 65 70 75 80
- Ser Leu Asn Leu Gly Leu Glu Lys Leu Glu Tyr Phe Phe Leu Ile Val 85 90 95
- Phe Ser Ile Glu Ala Ala Met Lys Ile Ile Ala Tyr Gly Phe Leu Phe 100 \$100\$
- His Gln Asp Ala Tyr Leu Arg Ser Gly Trp Asn Val Leu Asp Phe Thr 115 120 125
- Ile Val Phe Leu Gly Val Phe Thr Val Ile Leu Glu Gln Val Asn Val 130 135 140
- Ile Gln Ser His Thr Ala Pro Met Ser Ser Lys Gly Ala Gly Leu Asp 145 150 155 160
- Val Lys Ala Leu Arg Ala Phe Arg Val Leu Arg Pro Leu Arg Leu Val 165 170 175
- Ser Gly Val Pro Ser Leu Gln Val Val Leu Asn Ser Ile Phe Lys Ala 180 185 190
- Met Leu Pro Leu Phe His Ile Ala Leu Leu Val Leu Phe Met Val Ile 195 200 205
- Ile Tyr Ala Ile Ile Gly Leu Glu Leu Phe Lys Gly Lys Met His Lys 210 215 220
- Thr Cys Tyr Phe Ile Gly Thr Asp Ile Val Ala Thr Val Glu Asn Glu 225 230 235 240
- Glu Pro Ser Pro Cys Ala Arg Thr Gly Ser Gly Arg Arg Cys Thr Ile \$245\$ \$250\$ \$255\$
- Asn Gly Ser Glu Cys Arg Gly Gly Cys Pro Gly Pro Asn His Gly Ile $260 \hspace{1cm} 265 \hspace{1cm} 270 \hspace{1cm}$
- Thr His Phe Asp Asn Phe Gly Phe Ser Met Leu Thr Val Tyr Gln Cys 275 280 285
- Ile Thr Met Glu Gly Trp Thr Asp Val Leu Tyr Trp Val Asn Asp Ala 290 295 300
- Ile Gly Asn Glu Trp Pro Trp Ile Tyr Phe Val Thr Leu Ile Leu Leu 305 310 315 320
- Gly Ser Phe Phe Ile Leu Asn Leu Val Leu Gly Val Leu Ser Gly Glu 325 330 335

Phe Thr Lys Glu Arg Glu Lys Ala Lys Ser Arg Gly Thr Phe Gln Lys 340 345 350 Leu Arg Glu Lys Gln Gln Leu Asp Glu Asp Leu Arg Gly Tyr Met Ser 355 360 365 Trp Ile Thr Gln Gly Glu Val Met Asp Val Glu Asp Phe Arg Glu Gly 370 375 380 Lys Leu Ser Leu Asp Glu Gly Gly Ser Asp Thr Glu Ser Leu Tyr Glu 385 390 395 400 Ile Ala Gly Leu Asn Lys Ile Ile Gln Phe Ile Arg His Trp Arg Gln 405 410 415 Trp Asn Arg Ile Phe Arg Trp Lys Cys His Asp Ile Val Lys Ser Lys 420 425 430 Val Phe Tyr Trp Leu Val Ile Leu Ile Val Ala Leu Asn Thr Leu Ser 435 440 445 Ile Ala Ser Glu His His Asn Gln Pro His Trp Leu Thr Arg Leu Gln Asp Ile Ala Asn Arg Val Leu Leu Ser Leu Phe Thr Thr Glu Met Leu 465 470 475 480 Met Lys Met Tyr Gly Leu Gly Leu Arg Gln Tyr Phe Met Ser Ile Phe 485 490 495 Asn Arg Phe Asp Cys Phe Val Val Cys Ser Gly Ile Leu Glu Ile Leu 500 510 Leu Val Glu Ser Gly Ala Met Thr Pro Leu Gly Ile Ser Val Leu Arg Cys Ile Arg Leu Leu Arg Ile Phe Lys Ile Thr Lys Tyr Trp Thr Ser 530 540 Leu Ser Asn Leu Val Ala Ser Leu Leu Asn Ser Ile Arg Ser Ile Ala 545 550 555 560 Ser Leu Leu Leu Leu Phe Leu Phe Ile Val Ile Phe Arg Leu Leu 565 570 575 Gly Met Gln Leu Phe Gly Gly Arg Tyr Asp Phe Glu Asp Thr Glu Val $580 \ \ 585 \ \ 590$ Arg Arg Ser Asn Phe Asp Asn Phe Pro Gln Ala Leu Ile Ser Val Phe

Gln Val Leu Thr Gly Glu Asp Trp Thr Ser Met Met Tyr Asn Gly Ile 610 615 620

Met Ala Ser Ser Gly Pro Ser Tyr Pro Gly Met Leu Val Cys Ile Tyr 625 630 635 640

Phe Ile Ile Leu Phe Val Cys Gly Asn Tyr Ile Leu Leu Asn Val Phe 645 650 655Leu Ala Ile Ala Val Asp Asn Leu Ala Glu Ala Glu Ser Leu Thr Ser 660 665 670 Ala Gl
n Lys Ala Lys Ala Glu Glu Lys Lys Arg Arg Lys Met Ser Lys 675 680 685 Gly Leu Pro Asp Lys Ser Glu Glu Glu Lys Ser Thr Met Ala Lys Lys Leu Glu Gln Lys Pro Lys Gly Glu Gly Ile Pro Thr Thr Ala Lys Leu 705 710 715 720 Lys Ile Asp Glu Phe Glu Ser Asn Val Asn Glu Val Lys Asp Pro Tyr 725 730 735Pro Ser Ala Asp Phe Pro Gly Asp Asp Glu Glu Asp Glu Pro Glu Ile 740 745 750 Pro Leu Ser Pro Arg Pro Arg Pro Leu Ala Glu Leu Gln Leu Lys Glu 755 760 765 Lys Ala Val Pro Ile Pro Glu Ala Ser Ser Phe Phe Ile Phe Ser Pro 770 775 780 Thr Asn Lys Ile Arg Val Leu Cys His Arg Ile Val Asn Ala Thr Trp 785 790 795 800 Phe Thr Asn Phe Ile Leu Leu Phe Ile Leu Leu Ser Ser Ala Ala Leu 805 810 815 Ala Ala Glu Asp Pro Ile Arg Ala Asp Ser Met Arg Asn Gln Ile Leu 820 825 830 Lys His Phe Asp Ile Gly Phe Thr Ser Val Phe Thr Val Glu Ile Val 835 \$840Leu Lys Met Thr Thr Tyr Gly Ala Phe Leu His Lys Gly Ser Phe Cys 850 860 Arg Asn Tyr Phe Asn Met Leu Asp Leu Leu Val Val Ala Val Ser Leu 865 870 885 Ile Ser Met Gly Leu Glu Ser Ser Ala Ile Ser Val Val Lys Ile Leu 885 890 895 Arg Val Leu Arg Val Leu Arg Pro Leu Arg Ala Ile Asn Arg Ala Lys 900 905 910 Gly Leu Lys His Val Ala Arg Cys Met Phe Val Ala Ile Ser Thr Ile 915 920 925 Gly Asn Ile Val Leu Val Thr Thr Leu Leu Gln Phe Met Phe Ala Cys 930 940

- Ile Gly Val Gln Leu Phe Lys Gly Lys Phe Phe Arg Cys Thr Asp Leu 945 950 955 960
- Ser Lys Met Thr Glu Glu Glu Cys Arg Gly Tyr Tyr Tyr Val Tyr Lys 965 970 975
- Asp Gly Asp Pro Met Gln Ile Glu Leu Arg His Arg Glu Trp Val His 980 985 990
- Ser Asp Phe His Phe Asp Asn Val Leu Ser Ala Met Met Ser Leu Phe 995 1000 1005
- Thr Val Ser Thr Phe Glu Gly Trp Pro Gln Leu Leu Tyr Lys Ala 1010 1015 1020
- Ile Asp Ser Asn Ala Glu Asp Val Gly Pro Ile Tyr Asn Asn Arg 1025 1030 1035
- Val Glu Met Ala Ile Phe Phe Ile Ile Tyr Ile Ile Leu Ile Ala 1040 1045 1050
- Phe Phe Met Met Asn Ile Phe Val Gly Phe Val Ile Val Thr Phe 1055 1060
- Gln Glu Gln Gly Glu Thr Glu Tyr Lys Asn Cys Glu Leu Asp Lys 1070 1075 1080
- Asn Gln Arg Gln Cys Val Gln Tyr Ala Leu Lys Ala Arg Pro Leu 1085 1090 1095
- Arg Cys Tyr Ile Pro Lys Asn Pro Tyr Gln Tyr Gln Val Trp Tyr 1100 1105 1110
- Met Leu Asn Thr Ile Cys Leu Gly Met Gln His Tyr Asn Gln Ser 1130 1135 1140
- Glu Gln Met Asn His Ile Ser Asp Ile Leu Asn Val Ala Phe Thr 1145 $$1150\$
- Ala Arg Gly Tyr Phe Gly Asn Pro Trp Asn Val Phe Asp Phe Leu 1175 $$ 1180 $$ 1185
- Thr Phe Leu Ala Ser Ser Gly Gly Leu Tyr Cys Leu Gly Gly Gly 1205 1215
- Cys Gly Asn Val Asp Pro Asp Glu Ser Ala Arg Ile Ser Ser Ala 1220 1225 1230

- Phe Phe Arg Leu Phe Arg Val Met Arg Leu Ile Lys Leu Leu Ser 1235 1240 1245
- Arg Ala Glu Gly Val Arg Thr Leu Leu Trp Thr Phe Ile Lys Ser 1250 1255 1260
- Phe Gln Ala Leu Pro Tyr Val Ala Leu Leu Ile Val Met Leu Phe 1265 1270 1275
- Phe Ile Tyr Ala Val Ile Gly Met Gln Met Phe Gly Lys Ile Ala 1280 1285 1290
- Leu Val Asp Gly Thr Gln Ile Asn Arg Asn Asn Asn Phe Gln Thr 1295 1300 1305
- Phe Pro Gln Ala Val Leu Leu Phe Arg Cys Ala Thr Gly Glu 1310 1315 1320
- Ala Trp Gln Glu Ile Leu Leu Ala Cys Ser Tyr Gly Lys Leu Cys 1325 $$ 1330 $$ 1335
- Thr Asn Phe Ala Tyr Tyr Tyr Phe Ile Ser Phe Tyr Met Leu Cys 1355 1360 1365
- Ala Phe Leu Val Ile Asn Leu Phe Val Ala Val Ile Met Asp Asn 1370 1375 1380
- Phe Asp Tyr Leu Thr Arg Asp Trp Ser Ile Leu Gly Pro His His 1385 1390 1395
- Leu Asp Glu Phe Lys Ala Ile Trp Ala Glu Tyr Asp Pro Glu Ala 1400 \$1400\$
- Lys Gly Arg Ile Lys His Leu Asp Val Val Thr Leu Leu Arg Arg 1415 $$ 1420 $$ 1425
- Ile Gln Pro Pro Leu Gly Phe Gly Lys Phe Cys Pro His Arg Val 1430 1435 1440
- Ala Cys Lys Arg Leu Val Gly Met Asn Met Pro Leu Asn Ser Asp 1445 1455
- Gly Thr Val Thr Phe Asn Ala Thr Leu Phe Ala Leu Val Arg Thr 1460 1465 1470
- Ala Leu Lys Ile Lys Thr Glu Gly Asn Phe Glu Gln Ala Asn Glu 1475 1480 1485
- Glu Leu Arg Ala Ile Ile Lys Lys Ile Trp Lys Arg Thr Ser Met 1490 1495 1500
- Lys Leu Leu Asp Gln Val Ile Pro Pro Ile Gly Asp Asp Glu Val 1505 1510 1515

- Thr Val Gly Lys Phe Tyr Ala Thr Phe Leu Ile Gln Glu His Phe 1520 1530
- Arg Lys Phe Met Lys Arg Gln Glu Glu Tyr Tyr Gly Tyr Arg Pro $1535 \hspace{1cm} 1540 \hspace{1cm} 1545$
- Lys Lys Asp Ile Val Gln Ile Gln Ala Gly Leu Arg Thr Ile Glu 1550 1560
- Glu Glu Ala Ala Pro Glu Ile Cys Arg Thr Val Ser Gly Asp Leu 1565 1570 1575
- Ala Ala Glu Glu Glu Leu Glu Arg Ala Met Val Glu Ala Ala Met 1580 1585 1590
- Glu Glu Gly Ile Phe Arg Arg Thr Gly Gly Leu Phe Gly Gln Val $_{\rm 1595}$ $_{\rm 1600}$ $_{\rm 1605}$
- Asp Asn Phe Leu Glu Arg Thr Asn Ser Leu Pro Pro Val Met Ala 1610 1615 1620
- Asn Gln Arg Pro Leu Gln Phe Ala Glu Ile Glu Met Glu Glu Met 1625 1630 1635
- Glu Ser Pro Val Phe Leu Glu Asp Phe Pro Gln Asp Pro Arg Thr 1640 1645 1650
- Asn Pro Leu Ala Arg Ala Asn Thr Asn Asn Ala Asn Val 1655 1660 1665
- Ala Tyr Ala Asn Ser Asn His Ser Asn Ser His Val Phe Ser Ser 1670 1675 1680
- Val His Tyr Glu Arg Glu Phe Pro Glu Glu Thr Glu Thr Pro Ala 1685 1690 1695
- Thr Arg Gly Arg Ala Leu Gly Gln Pro Cys Arg Ser Leu Gly Pro 1700 1710 1710
- His Ser Lys Pro Cys Val Glu Met Leu Lys Gly Leu Leu Thr Gln 1715 1720 1725
- Arg Ala Met Pro Arg Gly Gln Ala Pro Pro Ala Pro Cys Gln Cys 1730 1735 1740
- Pro Arg Val Glu Ser Ser Met Pro Glu Asp Arg Lys Ser Ser Thr 1745 1750 1755
- Pro Gly Ser Leu His Glu Glu Thr Pro His Ser Arg Ser Thr Arg 1760 1765 1770
- Glu Asn Thr Ser Arg Cys Ser Ala Pro Ala Thr Ala Leu Leu Ile 1775 1780 1785
- Gln Lys Ala Leu Val Arg Gly Gly Leu Gly Thr Leu Ala Ala Asp 1790 1795 1800

Ala Asn Phe Ile Met Ala Thr Gly Gln Ala Leu Gly Asp Ala Cys 1805 1810 1815 Gln Met Glu Pro Glu Glu Val Glu Ile Met Ala Thr Glu Leu Leu 1820 Lys Gly Arg Glu Ala Pro Asp Gly Met Ala Ser Ser Leu Gly Cys 1835 Leu Asn Leu Gly Ser Ser Leu Gly Ser Leu Asp Gln His Gln Gly 1860 1850 Ser Gln Glu Thr Leu Ile Pro Pro Arg Leu 1870 1865 <210> 7362 <211> DNA <212> <213> Homo sapiens <220> <221> gene (1)..(7362) <222> <223> n is dATP, dCTP, dGTP, or dTTP <220> CDS <221> (1516) . . (6834) <222> n is dATP, dCTP, dGTP, or dTTP <223> Xaa is any amino acid <220> misc_feature <221> $(151\overline{6})..(6834)$ <222> n is dATP, dCTP, dGTP, or dTTP; Xaa is any amino acid 15 agaataaggg cagggaccgc ggctcctacc tcttggtgat ccccttcccc attccgcccc 60 cgcctcaacg cccagcacag tgccctgcac acagtagtcg ctcaataaat gttcgtggat 120 gatgatgatg atgatgatga aaaaaatgca gcatcaacgg cagcagcaag cggaccacgc 180 gaacgaggca aactatgcaa gaggcaccag acttcctctt tctggtgaag gaccaacttc 240 300 tcagccgaat agctccaagc aaactgtcct gtcttggcaa gctgcaatcg atgctgctag acaggccaag gctgcccaaa ctatgagcac ctctgcaccc ccacctgtag gatctctctc 420 ccaaagaaaa cgtcagcaat acgccaagag caaaaaacag ggtaactcgt ccaacagccg acctgcccgc gcccttttct gtttatcact caataacccc atccgaagag cctgcattag 480 tatagtggaa tggaaaccat ttgacatatt tatattattg gctatttttg ccaattgtgt 540 ggccttagct atttacatcc cattccctga agatgattct aattcaacaa atcataactt 600 660 ggaaaaagta gaatatgcct tcctgattat ttttacagtc gagacatttt tgaagattat agcgtatgga ttattgctac atcctaatgc ttatgttagg aatggatgga atttactgga 720 ttttgttata gtaatagtag gattgtttag tgtaattttg gaacaattaa ccaaagaaac 840 agaaggeggg aaccaeteaa geggeaaate tggaggettt gatgteaaag eeeteegtge 900 ctttcgagtg ttgcgaccac ttcgactagt gtcaggagtg cccagtttac aagttgtcct gaactccatt ataaaagcca tggttcccct ccttcacata gcccttttgg tattatttgt 960 aatcataatc tatgctatta taggattgga actttttatt ggaaaaatgc acaaaacatg 1020

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        The 'Xaa' at location 475 stands for Lys, Asn, Arg, Ser, Thr, Ile, Met, Glu, Asp, Gly, Ala, Val, Gln, His, Pro, Leu, a stop codon, Tyr, Trp, Cys, or Phe.
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         The 'Xaa' at location 476 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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        The 'Xaa' at location 477 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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        The 'Kaa' at location 478 stands for Lys, Asn, Arg, Ser, Thr, Ile, Met, Glu, Asp, Gly, Ala, Val, Gln, His, Pro, Leu, a stop codon, Tyr, Trp, Cys, or Phe.
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        The 'Xaa' at location 480 stands for Lys, Asn, Arg, Ser, Thr, Ile, Met, Glu, Asp, Gly, Ala, Val, Gln, His, Pro, Leu, a stop codon, Tyr, Trp, Cys, or Phe.
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<223>
         The 'Xaa' at location 481 stands for Lys, Asn, Arg, Ser, Thr, Ile,
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         (482) . . (482)
         The 'Xaa' at location 482 stands for Lys, Asn, Arg, Ser, Thr, Ile, Met, Glu, Asp, Gly, Ala, Val, Gln, His, Pro, Leu, a stop codon,
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         Tyr, Trp, Cys, or Phe.
<220>
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         (151\overline{6})..(6834)
<222>
         n is dATP, dCTP, dGTP, or dTTP; Xaa is any amino acid
<223>
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Met Pro Thr Ser Glu Thr Glu Ser Val Asn Thr Glu Asn Val Ser Gly
Glu Gly Glu Asn Arg Gly Cys Cys Gly Ser Leu Trp Cys Trp Trp Arg
Arg Arg Gly Ala Ala Lys Ala Gly Pro Ser Gly Cys Arg Arg Trp Gly
```

40

35

- Gln Ala Ile Ser Lys Ser Lys Leu Ser Arg Arg Trp Arg Trp Asn 50 55
- Arg Phe Asn Arg Arg Cys Arg Ala Ala Val Lys Ser Val Thr Phe 65 70 75 80
- Tyr Trp Leu Val Ile Val Leu Val Phe Leu Asn Thr Leu Thr Ile Ser 85 90 95
- Ser Glu His Tyr Asn Gln Pro Asp Trp Leu Thr Gln Ile Gln Asp Met 100 \$105\$
- Pro Asn Lys Val Leu Leu Ala Leu Phe Thr Cys Glu Met Leu Val Lys 115 120 125
- Met Tyr Ser Leu Gly Leu Gln Ala Tyr Phe Val Ser Leu Phe Asn Arg 130 140
- Phe Asp Cys Phe Val Val Cys Gly Gly Ile Thr Glu Thr Ile Leu Val 145 150 160
- Glu Leu Glu Ile Met Ser Pro Leu Gly Ile Ser Val Phe Arg Cys Val 165 170 175
- Arg Leu Leu Arg Ile Phe Lys Val Thr Arg His Trp Thr Ser Leu Ser 180 185 190
- Asn Leu Val Ala Ser Leu Leu Asn Ser Met Lys Ser Ile Ala Ser Leu 195 200 205
- Leu Leu Leu Phe Leu Phe Ile Ile Ile Phe Ser Leu Leu Gly Met 210 215 220
- Gln Leu Phe Gly Gly Lys Phe Asn Phe Asp Glu Thr Gln Thr Lys Arg 225 230 235 240
- Ser Thr Phe Asp Asn Phe Pro Gln Ala Leu Leu Thr Val Phe Gln Ile 245 250 255
- Leu Thr Gly Glu Asp Trp Asn Ala Val Met Tyr Asp Gly Ile Met Ala 260 265 270
- Tyr Gly Gly Pro Ser Ser Ser Gly Met Ile Val Cys Ile Tyr Phe Ile $275 \hspace{1cm} 280 \hspace{1cm} 285 \hspace{1cm}$
- Ile Leu Phe Ile Cys Gly Asn Tyr Ile Leu Leu Asn Val Phe Leu Ala 290 295 300
- Ile Ala Val Asp Asn Leu Ala Asp Ala Glu Ser Leu Asn Thr Ala Gln 305 310 315 320
- Lys Glu Glu Ala Glu Glu Lys Glu Arg Lys Lys Ile Ala Arg Lys Glu 325 330 335
- Ser Leu Glu Asn Lys Lys Asn Asn Lys Pro Glu Val Asn Gln Ile Ala $340 \hspace{1cm} 345 \hspace{1cm} 350$

- Asn Ser Asp Asn Lys Val Thr Ile Asp Asp Tyr Arg Glu Glu Asp Glu 355 \$360\$
- Asp Lys Asp Pro Tyr Pro Pro Cys Asp Val Pro Gly Met Val Xaa Xaa 370 $^{\prime}$ 375 $^{\prime}$ 380

- Xaa Xaa Pro Cys Arg Ile Arg Val Gly Cys His Lys Leu Ile As
n His 485 490 495
- His Ile Phe Thr Asn Leu Ile Leu Val Phe Ile Met Leu Ser Ser Ala 500 505 510
- Ala Leu Ala Ala Glu Asp Pro Ile Arg Ser His Ser Phe Arg Asn Thr 515 520 525
- Ile Leu Gly Tyr Phe Asp Tyr Ala Phe Thr Ala Ile Phe Thr Val Glu 530 540
- Ile Leu Leu Lys Met Thr Thr Phe Gly Ala Phe Leu His Lys Gly Ala 545 550 550 560
- Phe Cys Arg Asn Tyr Phe Asn Leu Leu Asp Met Leu Val Val Gly Val 565 570 575
- Ser Leu Val Ser Phe Gly Ile Gln Ser Ser Ala Ile Ser Val Val Lys 580 580 585
- Ile Leu Arg Val Leu Arg Val Leu Arg Pro Leu Arg Ala Ile As
n Arg 595 600 605
- Ala Lys Gly Leu Lys His Val Val Gln Cys Val Phe Val Ala Ile Arg 610 615 620
- Thr Ile Gly Asn Ile Met Ile Val Thr Thr Leu Leu Gln Phe Met Phe 625 630 635 640

- Asp Glu Ala Lys Ser Asn Pro Glu Glu Cys Arg Gly Leu Phe Ile Leu $_{660}$ $_{665}$ $_{670}$
- Tyr Lys Asp Gly Asp Val Asp Ser Pro Val Val Arg Glu Arg Ile Trp $_{675}$ $$ 685
- Gln Asn Ser Asp Phe Asn Phe Asp Asn Val Leu Ser Ala Met Met Ala 690 695 700
- Leu Phe Thr Val Ser Thr Phe Glu Gly Trp Pro Ala Leu Leu Tyr Lys 705 710 715 720
- Ala Ile Asp Ser Asn Gly Glu Asn Ile Gly Pro Ile Tyr Asn His Arg 725 730 735
- Val Glu Ile Ser Ile Phe Phe Ile Ile Tyr Ile Ile Ile Val Ala Phe 740 745 750
- Phe Met Met Asn Ile Phe Val Gly Phe Val Ile Val Thr Phe Gln Glu 755 $$ 765 $$ 765
- Gln Gly Glu Lys Glu Tyr Lys Asn Cys Glu Leu Asp Lys Asn Gln Arg $770 \hspace{1.5cm} 785 \hspace{1.5cm} 785$
- Gln Cys Val Glu Tyr Ala Leu Lys Ala Arg Pro Leu Arg Arg Tyr Ile 785 790 795 800
- Pro Lys Asn Pro Tyr Gln Tyr Lys Phe Trp Tyr Val Val Asn Ser Ser 805 810
- Pro Phe Glu Tyr Met Met Phe Val Leu Ile Met Leu Asn Thr Leu Cys 820 825
- Leu Ala Met Gln His Tyr Glu Gln Ser Lys Met Phe Asn Asp Ala Met 835 $\,$ 840 $\,$ 845
- Asp Ile Leu Asn Met Val Phe Thr Gly Val Phe Thr Val Glu Met Val 850 855 860
- Leu Lys Val Ile Ala Phe Lys Pro Lys Gly Tyr Phe Ser Asp Ala Trp 865 870 880
- Asn Thr Phe Asp Ser Leu Ile Val Ile Gly Ser Ile Ile Asp Val Ala 885 890 895
- Leu Ser Glu Ala Lys Pro Thr Glu Ser Glu Asn Val Pro Val Pro Thr 900 905 910
- Ala Thr Pro Gly Asn Ser Glu Glu Ser Asn Arg Ile Ser Ile Thr Phe 915 920 925
- Phe Arg Leu Phe Arg Val Met Arg Leu Val Lys Leu Leu Ser Arg Gly 930 940
- Glu Gly Ile Arg Thr Leu Leu Trp Thr Phe Ile Lys Ser Phe Gln Ala 945 950 955 960

- Leu Pro Tyr Val Ala Leu Leu Ile Ala Met Leu Phe Phe Ile Tyr Ala 965 970 975
- Val Ile Gly Met Gln Met Phe Gly Lys Val Ala Met Arg Asp Asn Asn 980 985 990
- Gln Ile Asn Arg Asn Asn Asn Phe Gln Thr Phe Pro Gln Ala Val Leu 995 1000 1005
- Leu Leu Phe Arg Cys Ala Thr Gly Glu Ala Trp Gln Glu Ile Met 1010 1015 1020
- Leu Ala Cys Leu Pro Gly Lys Leu Cys Asp Pro Glu Ser Asp Tyr 1025 1035
- Asn Pro Gly Glu Glu Tyr Thr Cys Gly Ser Asn Phe Ala Ile Val 1040 1040
- Leu Phe Val Ala Val Ile Met Asp Asn Phe Asp Tyr Leu Thr Arg 1070 1080
- Asp Trp Ser Ile Leu Gly Pro His His Leu Asp Glu Phe Lys Arg 1085 1090 1095
- Ile Trp Ser Glu Tyr Asp Pro Glu Ala Lys Gly Arg Ile Lys His 1100 \$1105\$
- Leu Asp Val Val Thr Leu Leu Arg Arg Ile Gln Pro Pro Leu Gly 1115 1120 1125
- Phe Gly Lys Leu Cys Pro His Arg Val Ala Cys Lys Arg Leu Val 1130 \$1135\$
- Ala Met Asn Met Pro Leu Asn Ser Asp Gly Thr Val Met Phe Asn 1145 1150 1155
- Ala Thr Leu Phe Ala Leu Val $\mbox{Arg Thr}$ Ala Leu Lys \mbox{Ile} Lys Thr 1160 $\mbox{1165}$ $\mbox{1170}$
- Glu Gly Asn Leu Glu Gln Ala Asn Glu Glu Leu Arg Ala Val Ile 1175 1180 1185
- Lys Lys Ile Trp Lys Lys Thr Ser Met Lys Leu Leu Asp Gln Val 1190 \$1200\$
- Val Pro Pro Ala Gly Asp Asp Glu Val Thr Val Gly Lys Phe Tyr 1205 1210 1215
- Ala Thr Phe Leu Ile Gln Asp Tyr Phe Arg Lys Phe Lys Lys Arg 1220 1225 1230
- Lys Glu Gln Gly Leu Val Gly Lys Tyr Pro Ala Lys Asn Thr Thr 1235 1240 1245

- Ile Ala Leu Gln Ala Gly Leu Arg Thr Leu His Asp Ile Gly Pro 1250 1255 1260
- Glu Ile Arg Arg Ala Ile Ser Cys Asp Leu Gln Asp Asp Glu Pro 1265 1270 1275
- Glu Glu Thr Lys Arg Glu Glu Glu Asp Asp Val Phe Lys Arg Asn 1280 1290
- Gly Ala Leu Leu Gly Asn His Val Asn His Val Asn Ser Asp Arg 1295 1300 1305
- Arg Asp Ser Leu Gln Gln Thr Asn Thr Thr His Arg Pro Leu His 1310 1315 1320
- Val Gln Arg Pro Ser Ile Pro Pro Ala Ser Asp Thr Glu Lys Pro 1325 1330 1335
- Leu Phe Pro Pro Ala Gly Asn Ser Val Cys His Asn His His Asn 1340 1345 1350
- His Asn Ser Ile Gly Lys Gln Val Pro Thr Ser Thr Asn Ala Asn 1355 $$ 1360 $$ 1365
- Leu Asn Asn Ala Asn Met Ser Lys Ala Ala His Gly Lys Arg Pro 1370 1380
- Ser Ile Gly Asn Leu Glu His Val Ser Glu Asn Gly His His Ser 1385 1390 1395
- Ser His Lys His Asp Arg Glu Pro Gln Arg Arg Ser Ser Val Lys 1400 1405 1410
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- Glu Gln Leu Pro Thr Ile Cys Arg Glu Asp Pro Glu Ile His Gly 1430 1440
- Tyr Phe Arg Asp Pro His Cys Leu Gly Glu Gln Glu Tyr Phe Ser 1445 1450 1455
- Ser Glu Glu Cys Tyr Glu Asp Asp Ser Ser Pro Thr Trp Ser Arg 1460 1465 1470
- Gln Asn Tyr Gly Tyr Tyr Ser Arg Tyr Pro Gly Arg Asn Ile Asp 1475 1480 1485
- Ser Glu Arg Pro Arg Gly Tyr His His Pro Gln Gly Phe Leu Glu 1490 1495 1500
- Arg Arg Leu Leu Pro Pro Thr Pro Ala Ser His Arg Arg Ser Ser 1520 1525 1530

- Phe Asn Phe Glu Cys Leu Arg Arg Gln Ser Ser Gln Glu Glu Val 1535 1540 1545
- Pro Ser Ser Pro Ile Phe Pro His Arg Thr Ala Leu Pro Leu His 1550 1555 1560
- Leu Met Gln Gln Gln Ile Met Ala Val Ala Gly Leu Asp Ser Ser 1565 1570 1575
- Lys Ala Gln Lys Tyr Ser Pro Ser His Ser Thr Arg Ser Trp Ala 1585
- Thr Pro Pro Ala Thr Pro Pro Tyr Arg Asp Trp Thr Pro Cys Tyr 1595 1600 1605
- Thr Pro Leu Ile Gln Val Glu Gln Ser Glu Ala Leu Asp Gln Val
- Asn Gly Ser Leu Pro Ser Leu His Arg Ser Ser Trp Tyr Thr Asp 1625 1630 1635
- Glu Pro Asp Ile Ser Tyr Arg Thr Phe Thr Pro Ala Ser Leu Thr 1640 1645 1650
- Val Pro Ser Ser Phe Arg Asn Lys Asn Ser Asp Lys Gln Arg Ser 1655 1660 1665
- Ala Asp Ser Leu Val Glu Ala Val Leu Ile Ser Glu Gly Leu Gly 1670 1675 1680
- Arg Tyr Ala Arg Asp Pro Lys Phe Val Ser Ala Thr Lys His Glu 1685 1690 1695
- Ile Ala Asp Ala Cys Asp Leu Thr Ile Asp Glu Met Glu Ser Ala 1700 1705 1710
- Ala Ser Thr Leu Leu Asn Gly Asn Val Arg Pro Arg Ala Asn Gly 1715 1720 1725
- Asp Val Gly Pro Leu Ser His Arg Gln Asp Tyr Glu Leu Gln Asp
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ttg Leu	ttt Phe 210	agt Ser	gta Val	att Ile	ttg Leu	gaa Glu 215	caa Gln	tta Leu	acc Thr	aaa Lys	gaa Glu 220	aca Thr	gaa Glu	gly	gl ^λ aaa	790
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gtg Val 625	gaa Glu	ctg Leu	gaa Glu	atc Ile	atg Met 630	tct Ser	ccc Pro	ctg Leu	gly aaa	atc Ile 635	tct Ser	gtg Val	ttt Phe	cgg Arg	tgt Cys 640	2038
gtg Val	cgc Arg	ctc Leu	tta Leu	aga Arg 645	atc Ile	ttc Phe	aaa Lys	gtg Val	acc Thr 650	agg Arg	cac His	tgg Trp	act Thr	tcc Ser 655	ctg Leu	2086
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cag Gln 785	Lys	gaa Glu	gaa Glu	gcg Ala	gaa Glu 790	Glu	aag Lys	gag Glu	agg Arg	aaa Lys 795	Lys	att Ile	gcc Ala	aga Arg	aaa Lys 800	2518
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gta ggc to Val Gly C	gc cac aay ys His Ly 900	g ctc atc s Leu Ile	aac cac Asn His 905	His Ile	ttc acc Phe Thr	aac ctc Asn Leu 910		2854
ctt gtc t Leu Val P	c atc atc ne Ile Me 15	g ctg agc t Leu Ser	agc gct Ser Ala 920	gcc ctg Ala Leu	gcc gca Ala Ala 925	gag gac Glu Asp	ccc Pro	2902
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gcc ttc a Ala Phe T 945	ca gcc at nr Ala Il	c ttt act e Phe Thr 950	gtt gag Val Glu	g atc ctg I Ile Leu 955	Leu Lys	atg aca Met Thr	act Thr 960	2998
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ttg ctg g Leu Leu A	at atg ct sp Met Le 980	g gtg gtt u Val Val	ggg gtg Gly Val	l Ser Leu	gtg tca Val Ser	ttt ggg Phe Gly 990	att Ile	3094
caa tcc a Gln Ser S	gt gcc at er Ala Il 95	c tcc gtt e Ser Val	gtg aa Val Ly 1000	ag att ct /s Ile Le	u Arg Va	c tta a 1 Leu A 105	gg gtc rg Val	3142
ctg cgt Leu Arg 1010	ccc ctc a Pro Leu A	rg Ala Il	c aaca e Asn A	aga gca a Arg Ala I	aaa gga Lys Gly 1020	ctt aag Leu Lys	cac His	3187
gtg gtc Val Val 1025	cag tgc g Gln Cys V		g gcc a il Ala : 330	atc cgg a Ile Arg T	hr Ile 1035	ggc aac Gly Asn		3232
		icc ctc ct Thr Leu Le		ttc atg t Phe Met F		tgt atc Cys Ile		3277
		ag ggg aa ys Gly Ly 10		tat cgc t Tyr Arg (gat gaa Asp Glu		3322
aaa agt Lys Ser 1070				gga ctt t Gly Leu I		ctc tac Leu Tyr		3367
gat ggg Asp Gly 1085								3412
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ctc ttc Leu Phe 1115	aca gtc t Thr Val S	cc acg to Ser Thr Pl		ggc tgg (Gly Trp 1				3502
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		Asn				tgt Cys 1195						Lys			3727
		Arg				ccc Pro 1210						Tyr			3772
		Val				tcg Ser 1225									3817
						ctc Leu 1240									3862
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						gaa Glu 1315							gct Ala		4087
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						ctc Leu 1375									4267
						cag Gln 1390									4312
						agg Arg 1405									4357
						ttc Phe 1420									4402
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	gac Asp 1685					aca Thr 1690						gat Asp	gat Asp	gtg Val	521:	2
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	agt Ser 1715					tcc Ser 1720							acc Thr		530:	2

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		Lys				cct Pro 1750									5392
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Phe Thr Pro
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Asp Ser Asp Ile Val Ala Glu Glu Asp Pro Ala Pro Cys Ala Phe Ser

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Ser Ser Glu His Tyr Asn Gln Pro Asp Trp Leu Thr Gln Ile Gln Asp 565 570 575

Lys Met Tyr Ser Leu Gly Leu Gln Ala Tyr Phe Val Ser Leu Phe Asn 595 600 605

Arg Phe Asp Cys Phe Val Val Cys Gly Gly Ile Thr Glu Thr Ile Leu 610 $\,$ 615 $\,$ 620

Val Glu Leu Glu Ile Met Ser Pro Leu Gly Ile Ser Val Phe Arg Cys Val Arg Leu Leu Arg Ile Phe Lys Val Thr Arg His Trp Thr Ser Leu 645 650 655 Ser Asn Leu Val Ala Ser Leu Leu Asn Ser Met Lys Ser Ile Ala Ser Leu Leu Leu Leu Phe Leu Phe Ile Ile Phe Ser Leu Leu Gly Met Gln Leu Phe Gly Gly Lys Phe Asn Phe Asp Glu Thr Gln Thr Lys 690 695 700Arg Ser Thr Phe Asp Asn Phe Pro Gln Ala Leu Leu Thr Val Phe Gln 705 710 710 715 720Ile Leu Thr Gly Glu Asp Trp Asn Ala Val Met Tyr Asp Gly Ile Met 725 730735 Ala Tyr Gly Gly Pro Ser Ser Ser Gly Met Ile Val Cys Ile Tyr Phe 740 745 750 Ile Ile Leu Phe Ile Cys Gly Asn Tyr Ile Leu Leu Asn Val Phe Leu 755 760 765 Ala Ile Ala Val Asp Asn Leu Ala Asp Ala Glu Ser Leu Asn Thr Ala 770 780 Gln Lys Glu Glu Ala Glu Glu Lys Glu Arg Lys Lys Ile Ala Arg Lys 785 790 800 Glu Ser Leu Glu Asn Lys Lys Asn Asn Lys Pro Glu Val Asn Gln Ile 805 810 815 Ala Asn Ser Asp Asn Lys Val Thr Ile Asp Asp Tyr Arg Glu Glu Asp 820 825 830 Glu Asp Lys Asp Pro Tyr Pro Pro Cys Asp Val Pro Val Gly Glu Glu 835 Glu Glu Glu Glu Glu Glu Asp Glu Pro Glu Val Pro Ala Gly Pro Arg 850 855 860 . Pro Arg Arg Ile Ser Glu Leu Asn Met Lys Glu Lys Ile Ala Pro Ile 865 870 875 880 Pro Glu Gly Ser Ala Phe Phe Ile Leu Ser Lys Thr Asn Pro Ile Arg Val Gly Cys His Lys Leu Ile Asn His His Ile Phe Thr Asn Leu Ile 900 905 910 Leu Val Phe Ile Met Leu Ser Ser Ala Ala Leu Ala Ala Glu Asp Pro

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- Phe Gly Ala Phe Leu His Lys Gly Ala Phe Cys Arg Asn Tyr Phe Asn 965 970 975
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gat Asp	ccg Pro 450	gag Glu	aat Asn	gag Glu	gaa Glu	gaa Glu 455	gga Gly	gga Gly	gag Glu	gaa Glu	ggc Gly 460	aaa Lys	cga Arg	aat Asn	act Thr	1510
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aga Arg	cgg Arg	aga Arg	ggc Gly 500	gcg Ala	gcc Ala	aag Lys	gcg Ala	999 Gly 505	ccc Pro	tct Ser	GJÀ aaa	tgt Cys	cgg Arg 510	cgg Arg	tgg Trp	1654
			atc Ile													1702
aac Asn	cga Arg 530	ttc Phe	aat Asn	cgc Arg	aga Arg	aga Arg 535	tgt Cys	agg Arg	gcc Ala	gcc Ala	gtg Val 540	aag Lys	tct Ser	gtc Val	acg Thr	1750
ttt Phe 545	tac Tyr	tgg Trp	ctg Leu	gtt Val	atc Ile 550	gtc Val	ctg Leu	gtg Val	ttt Phe	ctg Leu 555	aac Asn	acc Thr	tta Leu	acc Thr	att Ile 560	1798
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att Ile	gcc Ala	aac Asn	aaa Lys 580	gtc Val	ctc Leu	ttg Leu	gct Ala	ctg Leu 585	ttc Phe	acc Thr	tgc Cys	gag Glu	atg Met 590	Leu	gta Val	1894
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	Glu		gaa Glu			Ser					Ser					2038
					Ile					Arg					ctg Leu	2086
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ctg Leu	ttg Leu	ctt Leu 675	Leu	ctt Leu	ttt Phe	ctc Leu	ttc Phe 680	Ile	atc Ile	ato Ile	ttt Phe	ser 685	Leu	ctt Leu	Gly 999	2182
atg Met	cag Gln 690	Leu	ttt Phe	ggc	ggc	aag Lys 695	Phe	aat Asn	ttt Phe	gat Asp	gaa Glu 700	Thr	caa Glr	acc Thr	aag Lys	2230

cgg Arg 705	agc Ser	acc Thr	ttt Phe	gac Asp	aat Asn 710	ttc Phe	cct Pro	caa Gln	gca Ala	ctt Leu 715	ctc Leu	aca Thr	gtg Val	ttc Phe	cag Gln 720	2278
atc Ile	ctg Leu	aca Thr	ggc Gly	gaa Glu 725	gac Asp	tgg Trp	aat Asn	gct Ala	gtg Val 730	atg Met	tac Tyr	gat Asp	ggc Gly	atc Ile 735	atg Met	2326
gct Ala	tac Tyr	Gly 999	ggc Gly 740	cca Pro	tcc Ser	tct Ser	tca Ser	gga Gly 745	atg Met	atc Ile	gtc Val	tgc Cys	atc Ile 750	tac Tyr	ttc Phe	2374
								tat Tyr								2422
								gat Asp								2470
								gag Glu								2518
								aac Asn								2566
gcc Ala	aac Asn	agt Ser	gac Asp 820	aac Asn	aag Lys	gtt Val	aca Thr	att Ile 825	gat Asp	gac Asp	tat Tyr	aga Arg	gaa Glu 830	gag Glu	gat Asp	2614
gaa Glu	gac Asp	aag Lys 835	gac Asp	ccc Pro	tat Tyr	ccg Pro	cct Pro 840	tgc Cys	gat Asp	gtg Val	cca Pro	gta Val 845	Gly 999	gaa Glu	gag Glu	2662
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								ctt Leu								2806
								cac His 905								2854
								gct Ala								2902
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								gcc Ala								3046
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tgg Trp	tac Tyr 1220	Val	gtg Val	aac Asn	tct Ser	tcg Ser 1225	Pro	ttc Phe	gaa Glu	tac Tyr	atg Met 1230	Met	ttt Phe	gtc Val	3817
ctc Leu	atc Ile 1235	Met	ctc Leu	aac Asn	aca Thr	ctc Leu 1240	Cys	ttg Leu	gcc Ala	atg Met	cag Gln 1245	His	tac Tyr	gag Glu	3862
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tcc Ser	ctc Leu 1295	atc Ile	gta Val	atc Ile	ggc Gly	agc Ser 1300	att Ile	ata Ile	gac Asp	gtg Val	gcc Ala 1305	ctc Leu	agc Ser	gaa Glu	4042
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	gcc Ala 1460	Ile				atc Ile 1465	Ser				ctc Leu 1470	Cys		ttt Phe	4537
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	ctg Leu 1490	Thr	cgg Arg	gac Asp	tgg Trp	tct Ser 1495	Ile	ttg Leu	999 Gly	cct Pro	cac His 1500	His	tta Leu	gat Asp	4627
		Lys				tca Ser 1510	Glu					Ala			4672
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	ccc Pro 1535	Leu				aag Lys 1540	Leu				agg Arg 1545	Val			4762
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gto Val	atg Met 1565	Ph∈				ctg Leu 1570	Phe				cga Arg 1575	Thr			4852

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		Asp				tcc Ser 1720	ctt Leu	cag Gln	cag Gln	acc Thr	aat Asn 1725	Thr	acc Thr	cac His	5	302
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		His				tcc Ser 1765					gtt Val 1770	Pro			Ę	5437
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	gat Asp 1985					cag Gln 1990									6112
	tcg Ser 2000	Trp				cca Pro 2005						Arg	gac Asp		6157
	ccg Pro 2015	Cys	tac Tyr	acc Thr	ccc Pro	ctg Leu 2020	atc Ile				cag Gln 2025	Ser	gag Glu		6202
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						gca Ala 2095									6427
		His				gat Asp 2110						Ile		gag Glu	6472
		Ser				acc Thr 2125	Leu					Val			6517
cga Arg	gcc Ala 2135	Asn	ggg ggg	gat Asp	gtg Val	ggc Gly 2140	ccc Pro	ctc Leu	tca Ser	cac His	cgg Arg 2145	cag Gln		tat Tyr	6562

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Gln Ala Asp His Ala Asn Glu Ala Asn Tyr Ala Arg Gly Thr Arg Leu . 20 25 30
Pro Leu Ser Gly Glu Gly Pro Thr Ser Gln Pro Asn Ser Ser Lys Gln 35 40 45
Thr Val Leu Ser Trp Gln Ala Ala Ile Asp Ala Ala Arg Gln Ala Lys 50 55 60
Ala Ala Gln Thr Met Ser Thr Ser Ala Pro Pro Pro Val Gly Ser Leu 65 70 75 80
Ser Gln Arg Lys Arg Gln Gln Tyr Ala Lys Ser Lys Lys Gln Gly Asn 85 90 95
Ser Ser Asn Ser Arg Pro Ala Arg Ala Leu Phe Cys Leu Ser Leu Asn 100 105 110
Asn Pro Ile Arg Arg Ala Cys Ile Ser Ile Val Glu Trp Lys Pro Phe 115 120 125
Asp Ile Phe Ile Leu Leu Ala Ile Phe Ala Asn Cys Val Ala Leu Ala 130 135 140

Ile Tyr Ile Pro Phe Pro Glu Asp Asp Ser Asn Ser Thr Asn His Asn 145 150 150 155

- Leu Glu Lys Val Glu Tyr Ala Phe Leu Ile Ile Phe Thr Val Glu Thr 165 170 175
- Phe Leu Lys Ile Ile Ala Tyr Gly Leu Leu His Pro Asn Ala Tyr 180 185 190
- Val Arg Asn Gly Trp Asn Leu Leu Asp Phe Val Ile Val Ile Val Gly 195 200 205
- Leu Phe Ser Val Ile Leu Glu Gln Leu Thr Lys Glu Thr Glu Gly Gly 210 215 220
- Asn His Ser Ser Gly Lys Ser Gly Gly Phe Asp Val Lys Ala Leu Arg 225 230 235
- Ala Phe Arg Val Leu Arg Pro Leu Arg Leu Val Ser Gly Val Pro Ser 245 250 255
- His Ile Ala Leu Leu Val Leu Phe Val Ile Ile Tyr Ala Ile Ile 275 280 285
- Gly Leu Glu Leu Phe Ile Gly Lys Met His Lys Thr Cys Phe Phe Ala 290 295 300
- Asp Ser Asp Ile Val Ala Glu Glu Asp Pro Ala Pro Cys Ala Phe Ser 305 310 310 320
- Gly Asn Gly Arg Gln Cys Thr Ala Asn Gly Thr Glu Cys Arg Ser Gly 325 330 335
- Trp Val Gly Pro Asn Gly Gly Ile Thr Asn Phe Asp Asn Phe Ala Phe 340 345 350
- Val Leu Tyr Trp Val Asn Asp Ala Ile Gly Trp Glu Trp Pro Trp Val 370 380
- Tyr Phe Val Ser Leu Ile Ile Leu Gly Ser Phe Phe Val Leu Asn Leu 385 390 395 400
- Val Leu Gly Val Leu Ser Gly Glu Phe Ser Lys Glu Arg Glu Lys Ala 405 410 415
- Lys Ala Arg Gly Asp Phe Gln Lys Leu Arg Glu Lys Gln Gln Leu Glu $420 \hspace{1.5cm} 425 \hspace{1.5cm} 430$
- Glu Asp Leu Lys Gly Tyr Leu Asp Trp Ile Thr Gln Ala Glu Asp Ile 435 440445
- Asp Pro Glu Asn Glu Glu Glu Gly Gly Glu Glu Gly Lys Arg Asn Thr 450 460

Ser Met Pro Thr Ser Glu Thr Glu Ser Val Asn Thr Glu Asn Val Ser Gly Glu Gly Glu Asn Arg Gly Cys Cys Gly Ser Leu Trp Cys Trp Trp 485 490 495Arg Arg Arg Gly Ala Ala Lys Ala Gly Pro Ser Gly Cys Arg Arg Trp $500 \hspace{1cm} 505 \hspace{1cm} 510$ Gly Gln Ala Ile Ser Lys Ser Lys Leu Ser Arg Arg Trp Arg Arg Trp 515 520 525 Asn Arg Phe Asn Arg Arg Arg Cys Arg Ala Ala Val Lys Ser Val Thr 530 535 540 Phe Tyr Trp Leu Val Ile Val Leu Val Phe Leu Asn Thr Leu Thr Ile Ser Ser Glu His Tyr Asn Gln Pro Asp Trp Leu Thr Gln Ile Gln Asp 565 570 575 Ile Ala Asn Lys Val Leu Leu Ala Leu Phe Thr Cys Glu Met Leu Val 580 585 590 Lys Met Tyr Ser Leu Gly Leu Gln Ala Tyr Phe Val Ser Leu Phe Asn 595 600 605 Arg Phe Asp Cys Phe Val Val Cys Gly Gly Ile Thr Glu Thr Ile Leu Val Glu Leu Glu Ile Met Ser Pro Leu Gly Ile Ser Val Phe Arg Cys 625 630 635 640 Val Arg Leu Leu Arg Ile Phe Lys Val Thr Arg His Trp Thr Ser Leu 645 650 655 Ser Asn Leu Val Ala Ser Leu Leu Asn Ser Met Lys Ser Ile Ala Ser Leu Leu Leu Leu Phe Leu Phe Ile Ile Phe Ser Leu Leu Gly Met Gln Leu Phe Gly Gly Lys Phe Asn Phe Asp Glu Thr Gln Thr Lys 690 695 700 Arg Ser Thr Phe Asp Asn Phe Pro Gln Ala Leu Leu Thr Val Phe Gln 705 710 715 720 Ile Leu Thr Gly Glu Asp Trp Asn Ala Val Met Tyr Asp Gly Ile Met 725 730 735Ala Tyr Gly Gly Pro Ser Ser Ser Gly Met Ile Val Cys Ile Tyr Phe 740 20 20 Ile Ile Leu Phe Ile Cys Gly Asn Tyr Ile Leu Leu Asn Val Phe Leu 755 760 765

- Ala Ile Ala Val Asp Asn Leu Ala Asp Ala Glu Ser Leu Asn Thr Ala 770 785 786
- Gln Lys Glu Glu Ala Glu Glu Lys Glu Arg Lys Lys Ile Ala Arg Lys 785 790 795 800
- Glu Ser Leu Glu Asn Lys Lys Asn Asn Lys Pro Glu Val Asn Gln Ile 805 810 815
- Ala Asn Ser Asp Asn Lys Val Thr Ile Asp Asp Tyr Arg Glu Glu Asp 820 825 830
- Glu Asp Lys Asp Pro Tyr Pro Pro Cys Asp Val Pro Val Gly Glu Glu 835 840 845
- Glu Glu Glu Glu Glu Glu Asp Glu Pro Glu Val Pro Ala Gly Pro Arg 850 855 860
- Pro Arg Arg Ile Ser Glu Leu Asn Met Lys Glu Lys Ile Ala Pro Ile 865 870 875 880
- Pro Glu Gly Ser Ala Phe Phe Ile Leu Ser Lys Thr Asn Pro Ile Arg 885 890 895
- Val Gly Cys His Lys Leu Ile Asn His His Ile Phe Thr Asn Leu Ile 900 905 910
- Leu Val Phe Ile Met Leu Ser Ser Ala Ala Leu Ala Ala Glu Asp Pro 915 920 925
- Ile Arg Ser His Ser Phe Arg Asn Thr Ile Leu Gly Tyr Phe Asp Tyr 930 940
- Ala Phe Thr Ala Ile Phe Thr Val Glu Ile Leu Leu Lys Met Thr Thr 945 950 955 960
- Phe Gly Ala Phe Leu His Lys Gly Ala Phe Cys Arg Asn Tyr Phe Asn 965 970 975
- Leu Leu Asp Met Leu Val Val Gly Val Ser Leu Val Ser Phe Gly Ile 980 985 990
- Gln Ser Ser Ala Ile Ser Val Val Lys Ile Leu Arg Val Leu Arg Val 995 1000 1005
- Leu Arg Pro Leu Arg Ala Ile Asn Arg Ala Lys Gly Leu Lys His 1010 1010 1015
- Val Val Gln Cys Val Phe Val Ala Ile Arg Thr Ile Gly Asn Ile 1025 1030 1035
- Met Ile Val Thr Thr Leu Leu Gln Phe Met Phe Ala Cys Ile Gly 1040 1045 1050
- Val Gln Leu Phe Lys Gly Lys Phe Tyr Arg Cys Thr Asp Glu Ala 1055 1060 1065

- Lys Ser Asn Pro Glu Glu Cys Arg Gly Leu Phe Ile Leu Tyr Lys 1070 $$1075\$
- Asp Gly Asp Val Asp Ser Pro Val Val Arg Glu Arg Ile Trp Gln 1085 1090 1095
- Asn Ser Asp Phe Asn Phe Asp Asn Val Leu Ser Ala Met Met Ala 1100 1105 1110
- Leu Phe Thr Val Ser Thr Phe Glu Gly Trp Pro Ala Leu Leu Tyr 1115 1120 1125
- His Arg Val Glu Ile Ser Ile Phe Phe Ile Ile Tyr Ile Ile Ile 1145 $$ 1150 $$ 1155
- Thr Phe Gln Glu Gln Gly Glu Lys Glu Tyr Lys Asn Cys Glu Leu 1175 1180 1185
- Asp Lys Asn Gln Arg Gln Cys Val Glu Tyr Ala Leu Lys Ala Arg 1190 1195 1200
- Pro Leu Arg Arg Tyr Ile Pro Lys Asn Pro Tyr Gln Tyr Lys Phe 1205 1210 1215
- Trp Tyr Val Val Asn Ser Ser Pro Phe Glu Tyr Met Met Phe Val 1220 1225 1230
- Leu Ile Met Leu Asn Thr Leu Cys Leu Ala Met Gln His Tyr Glu 1235 1240 1245
- Gln Ser Lys Met Phe Asn Asp Ala Met Asp Ile Leu Asn Met Val 1250 1255 1260
- Phe Thr Gly Val Phe Thr Val Glu Met Val Leu Lys Val Ile Ala 1265 1270 1275
- Phe Lys $\mbox{ Pro Lys Gly Tyr}$ Phe $\mbox{ Ser Asp Ala Trp Asn}$ $\mbox{ Thr Phe Asp }$ 1280 $\mbox{ 1285}$
- Ala Asp Pro Thr Glu Ser Glu Asn Val Pro Val Pro Thr Ala Thr 1310 $$ 1315 $$ 1320
- Pro Gly Asn Ser Glu Glu Ser Asn Arg Ile Ser Ile Thr Phe Phe 1325 1330 1335
- Arg Leu Phe Arg Val Met Arg Leu Val Lys Leu Leu Ser Arg Gly 1340 1345 1350

- Glu Gly Ile Arg Thr Leu Leu Trp Thr Phe Ile Lys Ser Phe Gln 1355 \$1360 \$1365
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- Tyr Ala Val Ile Gly Met Gln Met Phe Gly Lys Val Ala Met Arg 1385 1390 1395
- Asp Asn Asn Gln Ile Asn Arg Asn Asn Asn Phe Gln Thr Phe Pro $1400 \hspace{1.5cm} 1405 \hspace{1.5cm} 1410$
- Gln Ala Val Leu Leu Leu Phe Arg Cys Ala Thr Gly Glu Ala Trp 1415 1420 1425
- Glu Ser Asp Tyr Asn Pro Gly Glu Glu Tyr Thr Cys Gly Ser Asn 1445 1450 1455
- Phe Ala Ile Val Tyr Phe Ile Ser Phe Tyr Met Leu Cys Ala Phe 1460 \$1460\$
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- Lys Arg Leu Val Ala Met Asn Met Pro Leu Asn Ser Asp Gly Thr 1550 1560
- Val Met $\$ Phe Asn Ala $\$ Thr Leu $\$ Phe Ala Leu $\$ Val $\$ Arg $\$ Thr Ala Leu $\$ 1565 $\$ 1570 $\$ 1575
- Lys Ile Lys Thr Glu Gly Asn Leu Glu Gln Ala Asn Glu Glu Leu 1580 $\,$ 1585 $\,$ 1590
- Arg Ala Val Ile Lys Lys Ile Trp Lys Lys Thr Ser Met Lys Leu 1595 1600 1605
- Leu Asp Gln Val Val Pro Pro Ala Gly Asp Asp Glu Val Thr Val 1610 $$ 1620
- Gly Lys Phe Tyr Ala Thr Phe Leu Ile Gln Asp Tyr Phe Arg Lys 1625 1630 1635

- Phe Lys Lys Arg Lys Glu Gln Gly Leu Val Gly Lys Tyr Pro Ala 1640 1645 1650
- Lys Asn Thr Thr Ile Ala Leu Gln Ala Gly Leu Arg Thr Leu His 1655 \$1650\$
- Asp Ile Gly Pro Glu Ile Arg Arg Ala Ile Ser Cys Asp Leu Gln $1670 \\ \hspace*{1.5cm} 1675 \\ \hspace*{1.5cm} 1680 \\ \hspace*{1.5cm}$
- Asp Asp Glu Pro Glu Glu Thr Lys Arg Glu Glu Glu Asp Asp Val 1685
- Phe Lys Arg Asn Gly Ala Leu Leu Gly Asn His Val Asn His Val 1700 1705
- Asn Ser Asp Arg Arg Asp Ser Leu Gln Gln Thr Asn Thr His 1715 $$1720\$
- Arg Pro Leu His Val Gln Arg Pro Ser Ile Pro Pro Ala Ser Asp 1730 1740
- Thr Glu Lys Pro Leu Phe Pro Pro Ala Gly Asn Ser Val Cys His 1745 $$ 1755 $$ 1755
- Asn His His Asn His Asn Ser Ile Gly Lys Gln Val Pro Thr Ser 1760 1765 1770
- Thr Asn Ala Asn Leu Asn Asn Ala Asn Met Ser Lys Ala Ala His 1775 1780 1785
- Gly Lys Arg Pro Ser Ile Gly Asn Leu Glu His Val Ser Glu Asn 1790 1795 1800
- Gly His His Ser Ser His Lys His Asp Arg Glu Pro Gln Arg Arg 1805 1810 1815
- Ser Ser Val Lys Arg Thr Arg Tyr Tyr Glu Thr Tyr Ile Arg Ser 1820 \$1825\$
- Asp Ser Gly Asp Glu Gln Leu Pro Thr Ile Cys Arg Glu Asp Pro 1835 1845
- Glu Ile His Gly Tyr Phe Arg Asp Pro His Cys Leu Gly Glu Gln $1850\,$
- Glu Tyr Phe Ser Ser Glu Glu Cys Tyr Glu Asp Asp Ser Ser Pro 1865 1870 1870
- Thr Trp Ser Arg Gln Asn Tyr Gly Tyr Tyr Ser Arg Tyr Pro Gly 1880 1885
- Arg Asn Ile Asp Ser Glu Arg Pro Arg Gly Tyr His His Pro Gln 1895 1900 1905
- Gly Phe Leu Glu Asp Asp Asp Ser Pro Val Cys Tyr Asp Ser Arg 1910 1915 1920

- Arg Ser Pro Arg Arg Arg Leu Leu Pro Pro Thr Pro Ala Ser His 1925 1930 1935
- Arg Arg Ser Ser Phe Asn Phe Glu Cys Leu Arg Arg Gln Ser Ser 1940 1945 1950
- Gln Glu Glu Val Pro Ser Ser Pro Ile Phe Pro His Arg Thr Ala 1955 1960 1965
- Leu Pro Leu His Leu Met Gln Gln Gln Ile Met Ala Val Ala Gly 1970 1975 1980
- Leu Asp Ser Ser Lys Ala Gln Lys Tyr Ser Pro Ser His Ser Thr 1985 1990 1995
- Arg Ser Trp Ala Thr Pro Pro Ala Thr Pro Pro Tyr Arg Asp Trp 2000 2000 2010
- Thr Pro Cys Tyr Thr Pro Leu Ile Gln Val Glu Gln Ser Glu Ala 2015 2020 2025
- Leu Asp Gln Val Asn Gly Ser Leu Pro Ser Leu His Arg Ser Ser 2030 2035 2040
- Trp Tyr Thr Asp Glu Pro Asp Ile Ser Tyr Arg Thr Phe Thr Pro 2045 2055
- Ala Ser Leu Thr Val Pro Ser Ser Phe Arg Asn Lys Asn Ser Asp 2060 2065 2070
- Lys Gln Arg Ser Ala Asp Ser Leu Val Glu Ala Val Leu Ile Ser 2075 2080 2085
- Glu Gly Leu Gly Arg Tyr Ala Arg Asp Pro Lys Phe Val Ser Ala 2090 2095 2100
- Thr Lys His Glu Ile Ala Asp Ala Cys Asp Leu Thr Ile Asp Glu 2105 $$ 2110 $$ 2115
- Met Glu Ser Ala Ala Ser Thr Leu Leu Asn Gly Asn Val Arg Pro 2120 2125 2130
- Arg Ala Asn Gly Asp Val Gly Pro Leu Ser His Arg Gln Asp Tyr 2135 2140 2145
- Glu Leu Gln Asp Phe Gly Pro Gly Tyr Ser Asp Glu Glu Pro Asp 2150 2155 2160
- Pro Gly Arg Asp Glu Glu Asp Leu Ala Asp Glu Met Ile Cys Ile 2165 2170 2175

Thr Thr Leu 2180

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5	PIC) GII	ı Asp	GIU	10 10	. Lei	ı Arg	J Lys	. Lys	Glr 15	n Pro	Lys	5 Lys	Pro	c ctg Leu 20	285
Pro	gag Glu	gto Val	c ctg	Pro 25	agg Arg	r ccg	p ccg	g cgg Arg	gct Ala 30	cto Leu	tto Phe	tgo Cys	ctg Leu	aco Thr 35	c ctg Leu	333
cag Glr	aac Asn	ccg Pro	teu Leu 40	agg Arg	aag Lys	gcg Ala	tgc Cys	ato Ile 45	ago Ser	ato Ile	gtg Val	gaa Glu	tgg Trp 50	aaa Lys	ccc Pro	381
Phe	gag Glu	acc Thr 55	ato Ile	ato	ctg Leu	ctc Leu	acc Thr	atc	ttt Phe	gcc	aac Asn	tgt Cys 65	gtg Val	gcc Ala	ctg	429
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G1y	gtc Val	ttc Phe 135	acg Thr	gcg Ala	att Ile	ctg Leu	gaa Glu 140	cag Gln	gtc Val	aac Asn	gtc Val	atc Ile 145	cag Gln	agc Ser	aac Asn	669
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aac Asn	ttc Phe	ggc	Phe 280	tcc Ser	atg Met	ctc Leu	acc Thr	gtg Val 285	Tyr	cag Gln	tgc Cys	ato	acc Thr 290	Met	gag Glu	1101
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	ccc Pro					Al					His	29	73
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								s I			cag Gln	30	69
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		cgc Arg	gac Asp 1390					ggc Gly 1395						gag Glu	4428

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Thr Leu Ile Pro Pro Arg Pro
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- Ser Leu Asn Leu Gly Leu Glu Lys Leu Glu Tyr Phe Phe Leu Thr Val 85 90 95
- Phe Ser Ile Glu Ala Ala Met Lys Ile Ile Ala Tyr Gly Phe Leu Phe 100 105 110
- His Gln Asp Ala Tyr Leu Arg Ser Gly Trp Asn Val Leu Asp Phe Ile 115 120 125
- Ile Val Phe Leu Gly Val Phe Thr Ala Ile Leu Glu Gln Val Asn Val 130 135 140
- Ile Gln Ser Asn Thr Ala Pro Met Ser Ser Lys Gly Ala Gly Leu Asp 145 155 160
- Val Lys Ala Leu Arg Ala Phe Arg Val Leu Arg Pro Leu Arg Leu Val
- Ser Gly Val Pro Ser Leu Gln Val Val Leu Asn Ser Ile Phe Lys Ala 180 185 190
- Met Leu Pro Leu Phe His Ile Ala Leu Leu Val Leu Phe Met Val Ile 195 200 205
- Ile Tyr Ala Ile Ile Gly Leu Glu Leu Phe Lys Gly Lys Met His Lys 210 225
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- Lys Pro Ser Pro Cys Ala Arg Thr Gly Ser Gly Arg Pro Cys Thr Ile 245 250 255
- Asn Gly Ser Glu Cys Arg Gly Gly Trp Pro Gly Pro Asn His Gly Ile 260 265 270
- Thr His Phe Asp Asn Phe Gly Phe Ser Met Leu Thr Val Tyr Gln Cys 275 280 285
- Ile Thr Met Glu Gly Trp Thr Asp Val Leu Tyr Trp Val Asn Asp Ala 290 295 300
- Ile Gly Asn Glu Trp Pro Trp Ile Tyr Phe Val Thr Leu Ile Leu Leu 305 310 315 320
- Phe Thr Lys Glu Arg Glu Lys Ala Lys Ser Arg Gly Thr Phe Gln Lys 340 345 350

- Leu Arg Glu Lys Gln Gln Leu Glu Glu Asp Leu Arg Gly Tyr Met Ser 355 360 365
- Trp Ile Thr Gln Gly Glu Val Met Asp Val Glu Asp Leu Arg Glu Gly 370 375 380
- Lys Leu Ser Leu Glu Glu Gly Gly Ser Asp Thr Glu Ser Leu Tyr Glu 385 390 395 400
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- Ile Ala Ser Glu His His Asn Gln Pro Leu Trp Leu Thr His Leu Gln $_{\rm 450}$ $_{\rm 460}$
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